

U.S. ARMY ARMOR IN LIMITED WAR: ARMOR EMPLOYMENT  
TECHNIQUES IN KOREA AND VIETNAM

CPT David A. Niedringhaus  
HQDA, MILPERCEN (DAPC-OPA-E)  
200 Stovall Street  
Alexandria, VA 22332

AD-A181 423

Final report, 29 May, 1987

DTIC  
ELECTE  
JUN 16 1987  
S D

Approved for public release; distribution unlimited

A thesis submitted to Ohio State University (Columbus, Ohio), in  
partial fulfillment of the requirements for the degree of  
Master of Arts in Military History.

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. <b>A181423</b>	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) U.S. ARMY ARMOR IN LIMITED WAR: ARMOR EMPLOYMENT TECHNIQUES IN KOREA AND VIETNAM		5. TYPE OF REPORT & PERIOD COVERED Final report 29 May 1987
7. AUTHOR(s) CPT David A. Niedringhaus		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Student, HQDA, MILPERCEN (DAPC-OPA-E) 200 Stovall Street Alexandria, Virginia 22332		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS HQDA, MILPERCEN, ATTN: DAPC-OPA-E 200 Stovall Street Alexandria, Virginia 22332		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 29 May 1987
		13. NUMBER OF PAGES 153
		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES Master of Arts thesis, Ohio State University		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Armor; armor tactics; armor in Korea; armor in Vietnam; armor in limited war; U.S. Army armor; Korean War; Vietnam War; limited war; armor warfare; mechanized warfare		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Since the 1940's, the United States Army's doctrine for the employment of its armor forces has oriented toward a World War II-style conflict against a con- ventionally equipped opponent in a general war on the European continent. However, the two major wars that the United States has fought since then - the Korean War and the war in Vietnam - have been limited wars fought against non-mechanized forces in countries with armor-restricting terrain. Initially, these conditions seemed to indicate that armor units would not be able to fight		

## INSTRUCTIONS FOR PREPARATION OF REPORT DOCUMENTATION PAGE

**RESPONSIBILITY.** The controlling DoD office will be responsible for completion of the Report Documentation Page, DD Form 1473, in all technical reports prepared by or for DoD organizations.

**CLASSIFICATION.** Since this Report Documentation Page, DD Form 1473, is used in preparing announcements, bibliographies, and data banks, it should be unclassified if possible. If a classification is required, identify the classified item on the page by the appropriate symbol.

### COMPLETION GUIDE

General. Make Blocks 1, 4, 5, 6, 7, 11, 13, 15, and 16 agree with the corresponding information on the report cover. Leave Blocks 2 and 3 blank.

**Block 1.** Report Number. Enter the unique alphanumeric report number shown on the cover.

**Block 2.** Government Accession No. Leave Blank. This space is for use by the Defense Documentation Center.

**Block 3.** Recipient's Catalog Number. Leave blank. This space is for the use of the report recipient to assist in future retrieval of the document.

**Block 4.** Title and Subtitle. Enter the title in all capital letters exactly as it appears on the publication. Titles should be unclassified whenever possible. Write out the English equivalent for Greek letters and mathematical symbols in the title (see "Abstracting Scientific and Technical Reports of Defense sponsored RDT/E," AD-667 000). If the report has a subtitle, this subtitle should follow the main title, be separated by a comma or semicolon if appropriate, and be initially capitalized. If a publication has a title in a foreign language, translate the title into English and follow the English translation with the title in the original language. Make every effort to simplify the title before publication.

**Block 5.** Type of Report and Period Covered. Indicate here whether report is interim, final, etc., and, if applicable, inclusive dates of period covered, such as the life of a contract covered in a final contractor report.

**Block 6.** Performing Organization Report Number. Only numbers other than the official report number shown in Block 1, such as series numbers for in-house reports or a contractor, grantee number assigned by him, will be placed in this space. If no such numbers are used, leave this space blank.

**Block 7.** Author(s). Include corresponding information from the report cover. Give the name(s) of the author(s) in conventional order (for example, John R. Doe or, if author prefers, J. Robert Doe). In addition, list the affiliation of an author if it differs from that of the performing organization.

**Block 8.** Contract or Grant Number(s). For a contractor or grantee report, enter the complete contract or grant number(s) under which the work reported was accomplished. Leave blank in in-house reports.

**Block 9.** Performing Organization Name and Address. For in-house reports enter the name and address, including office symbol, of the performing activity. For contractor or grantee reports enter the name and address of the contractor or grantee who prepared the report and identify the appropriate corporate division, school, laboratory, etc., of the author. List city, state, and ZIP Code.

**Block 10.** Program Element, Project, Task Area, and Work Unit Numbers. Enter here the number code from the applicable Department of Defense form, such as the DD Form 1498, "Research and Technology Work Unit Summary" or the DD Form 1634, "Research and Development Planning Summary," which identifies the program element, project, task area, and work unit or equivalent under which the work was authorized.

**Block 11.** Controlling Office Name and Address. Enter the full, official name and address, including office symbol, of the controlling office. (Equates to funding/sponsoring agency. For definition see DoD Directive 5200.20, "Distribution Statements on Technical Documents.")

**Block 12.** Report Date. Enter here the day, month, and year or month and year as shown on the cover.

**Block 13.** Number of Pages. Enter the total number of pages.

**Block 14.** Monitoring Agency Name and Address (if different from Controlling Office). For use when the controlling or funding office does not directly administer a project, contract, or grant, but delegates the administrative responsibility to another organization.

**Blocks 15 & 15a.** Security Classification of the Report: Declassification/Downgrading Schedule of the Report. Enter in 15 the highest classification of the report. If appropriate, enter in 15a the declassification/downgrading schedule of the report, using the abbreviations for declassification/downgrading schedules listed in paragraph 4-207 of DoD 5200.1-R.

**Block 16.** Distribution Statement of the Report. Insert here the applicable distribution statement of the report from DoD Directive 5200.20, "Distribution Statements on Technical Documents."

**Block 17.** Distribution Statement (of the abstract entered in Block 20, if different from the distribution statement of the report). Insert here the applicable distribution statement of the abstract from DoD Directive 5200.20, "Distribution Statements on Technical Documents."

**Block 18.** Supplementary Notes. Enter information not included elsewhere but useful, such as: Prepared in cooperation with . . . Translation of (or by) . . . Presented at conference of . . . To be published in . . .

**Block 19.** Key Words. Select terms or short phrases that identify the principal subjects covered in the report, and are sufficiently specific and precise to be used as index entries for cataloging, conforming to standard terminology. The DoD "Thesaurus of Engineering and Scientific Terms" (TEST), AD-672 000, can be helpful.

**Block 20.** Abstract. The abstract should be a brief (not to exceed 200 words) factual summary of the most significant information contained in the report. If possible, the abstract of a classified report should be unclassified and the abstract to an unclassified report should consist of publicly-releasable information. If the report contains a significant bibliography or literature survey, mention it here. For information on preparing abstracts see "Abstracting Scientific and Technical Reports of Defense-Sponsored RDT&E," AD-667 000.

U.S. ARMY ARMOR IN LIMITED WAR: ARMOR EMPLOYMENT  
TECHNIQUES IN KOREA AND VIETNAM

A THESIS

Presented in Partial Fulfillment of the Requirements  
for the Degree Master of Arts in the Graduate  
School of the Ohio State University

By

David A. Niedringhaus, B.S.

\* \* \* \* \*

The Ohio State University

1987

Master's Examination Committee:

Dr. Allan R. Millett

Dr. Williamson Murray

Dr. Marc L. Raphael

Approved by

Allan R. Millett

Advisor

Department of History



To my wife, Leah

## ACKNOWLEDGEMENTS

I express my appreciation to Dr. Allan R. Millett for his guidance and encouragement during the preparation of this paper. I also give my thanks to Dr. Williamson Murray for his suggestions and help during my period of study at Ohio State University. Without their insight and comments this paper could not have been completed. Mr. Bill Hansen at the United States Army Armor School at Ft. Knox, Kentucky was very helpful in aiding me during my research, as was the staff at the United States Army Military History Institute at Carlisle Barracks, Pennsylvania. Any inaccuracies or deficiencies in the manuscript, of course, are completely my own responsibility. Finally, I extend to my wife, Leah, my sincerest thanks for her support and understanding during my many late nights spent working on this project.



iii

Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification .....	
By .....	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

## VITA

July 17, 1957 . . . . .	Born - Aurora, Colorado
1979 . . . . .	B.S., U.S. Military Academy, West Point, New York
1980-1981 . . . . .	Tank and Scout Platoon Leader, 2d Infantry Div., Korea.
1981-1985 . . . . .	Battalion Adjutant, Company Executive Officer, Tank Company Commander, 4th Infantry Division, Ft. Carson, Colorado.
1985-Present . . . . .	Student, The Ohio State University, Columbus, Ohio

## FIELDS OF STUDY

Major Field: American Military History

## TABLE OF CONTENTS

DEDICATION . . . . .	ii
ACKNOWLEDGEMENTS . . . . .	iii
VITA . . . . .	iv
LIST OF MAPS AND ILLUSTRATIONS . . . . .	vi
LIST OF ABBREVIATIONS AND ACRONYMS . . . . .	vii
CHAPTER . . . . .	PAGE
I. INTRODUCTION . . . . .	1
II. FACTORS LIMITING ARMOR EMPLOYMENT IN KOREA AND VIETNAM . . . . .	13
III. OFFENSIVE ARMOR EMPLOYMENT IN LIMITED ROLES - KOREA AND VIETNAM . . . . .	52
IV. ARMOR EMPLOYMENT IN DEFENSIVE ROLES - KOREA AND VIETNAM . . . . .	98
V. ARMOR EMPLOYMENT TECHNIQUES IN SECURITY MISSIONS - KOREA AND VIETNAM . . . . .	126
VI. SUMMARY AND CONCLUSIONS . . . . .	142
BIBLIOGRAPHY . . . . .	149

## LIST OF MAPS AND ILLUSTRATIONS

Figure 2a.	Korea: A Topographical Sketch.	p. 25
Figure 2b.	Province and Corps Tactical Zone Boundaries in South Vietnam.	p. 29
Figure 2c.	I CTZ trafficability - wet season.	p. 31
Figure 2d.	I CTZ trafficability - dry season.	p. 32
Figure 2e.	II CTZ trafficability - wet season.	p. 34
Figure 2f.	II CTZ trafficability - dry season.	p. 35
Figure 2g.	III CTZ trafficability - wet season.	p. 36
Figure 2h.	III CTZ trafficability - dry season.	p. 37
Figure 2i.	IV CTZ trafficability - wet season.	p. 39
Figure 2j.	IV CTZ trafficability - dry season.	p. 40
Figure 3a.	Cloverleaf technique formation.	p. 83
Figure 3b.	Armored Cavalry Platoon configuration in jungle terrain - single column.	p. 85
Figure 3c.	Armored Cavalry Platoon configuration in jungle terrain - double column.	p. 85
Figure 3d.	Tank Platoon - Inverted wedge.	p. 87
Figure 3e.	Tank Platoon - Inverted echelon.	p. 89
Figure 4a.	Armored Cavalry Troop Defensive Laager perimeter.	p. 115
Figure 4b.	Herringbone formation - Armored Cavalry Platoon.	p. 118
Figure 5a.	Herringbone formation - convoy escort	p. 135

## LIST OF ABBREVIATIONS AND ACRONYMS

ACAV	Armored Cavalry Assault Vehicle
ACR	Armored Cavalry Regiment
APC	Armored Personnel Carrier
CCF	Chinese Communist Forces
FDC	Fire Direction Center (Field Artillery)
FM	Field Manual, U.S. Army
HE	High Explosive (Tank Ammunition Round)
KMAG	Korean Military Advisory Group
MACOV	Mechanized and Armor Combat Operations in Vietnam (U.S. Army study in 1967)
MACV	Military Assistance Command, Vietnam
MLR	Main Line of Resistance
NKPA	North Korean People's Army
NVA	North Vietnamese Army
OPLR	Outpost Line of Resistance
ROK	Republic of Korea (South Korea)
USAARMS	United States Army Armor School (Ft. Knox, Ky.)
USAMHI	United States Army Military History Institute (Carlisle Barracks, Pa.)
VC	Viet Cong
WP	White Phosphorus (Tank Ammunition Round)

## CHAPTER I

### INTRODUCTION

In the autumn of 1949, the United States completed the withdrawal of the last of the occupation forces it had maintained in the Republic of Korea (ROK) since the end of World War II. The South Korean government, nervous about the ominous build-up of the North Korean army to the north of the 38th Parallel, anxiously sought to strengthen its own forces. The American government had transferred a great deal of military equipment to the ROK forces under the Surplus Property Act as it withdrew its forces, but the South Koreans believed they needed more support. In October 1949, the ROK Minister of National Defense submitted a request to the United States Military Advisory Group to the Republic of Korea (KMAG) for 189 American M26 tanks as part of the South Korean effort to improve its military capabilities. The acting KMAG Chief, Colonel William H. Sterling Wright, strongly recommended to U.S. Army Chief of Staff General J. Lawton Collins that the request be denied. The reason, he explained, was that the mountainous terrain, poor roads, and primitive bridges which existed on the Korean peninsula made tanks virtually useless.'

Eight months later, in June 1950, the North Korean army demonstrated convincingly that Colonel Wright's assessment had been wrong. Its tank spearheads shattered the outgunned ROK defenses and continued to roll forward with stunning ease even against American units hurriedly sent to Korea to shore up the crumbling ROK resistance. Eventually, American air power, artillery, tanks, and infantry with 3.5-inch rocket launchers succeeded in stopping and then eliminating the enemy's tanks, since the North Koreans had only a limited number of tanks and could not replace those destroyed in battle.<sup>2</sup> But a point had been made: armor could be employed effectively in Korea.

Fifteen years later, American ground units deployed for the first time in large numbers to another Asian battleground in Vietnam. Again reservations about the utility of armor arose. As the 1st Infantry Division prepared to deploy in June of 1965, the Department of the Army directed the division to eliminate the division's two tank battalions and its mechanized infantry. The directives called for the mechanized infantry units to be organized into dismounted infantry battalions.<sup>3</sup>

Overruling an Army staff proposal that at least one tank battalion be retained when the division deployed to Vietnam, Army Chief of Staff Harold K. Johnson sent a message to the Military Assistance Command, Vietnam (MACV) outlining the reasons behind the decision to withhold armor



and mechanized units. He mentioned the limited usefulness tanks had shown in Korea, their vulnerability to mines, and "the absence of major combat formations in prepared positions where the location is accessible" as rationales for the decision to rely entirely on infantry units at that point in the war.<sup>4</sup> General William Westmoreland, the MACV Commander, concurred, declaring that with few exceptions, "Vietnam is no place for either tank or mechanized infantry units."<sup>5</sup> Still, during the remainder of 1965 and into 1966, a few armored and mechanized units did deploy to Vietnam on a trial basis. By 1967, a study entitled "Mechanized and Armor Combat Operations, Vietnam" concluded as part of its findings that armored cavalry was probably the most cost-effective force on the Vietnam battlefield.<sup>6</sup>

Both of the above examples illustrate widely-held doubts about the utility of armor units in conflicts restrained by terrain and politics. In an army which looked at armor units as being almost exclusively tailored for a World War II, European-type battlefield, employing such units anywhere on the mountainous Korean peninsula or in the jungle and wet farmlands of Vietnam initially seemed to be folly. In both instances, however, those assumptions often proved false.

In Korea, the first American units to deploy - the 24th Infantry Division, the 25th Infantry Division, the 1st Cavalry Division, and the 2d Infantry Division - immediately

began to call for armor support of their own to counter the North Korean T-34's. No armor units were available in Japan, from which the 24th Infantry, 25th Infantry, and 1st Cavalry divisions had deployed.<sup>7</sup> During July and early August of 1950, the U.S. Eighth Army was pushed farther south until it held only a fifty-mile deep corner of the Korean peninsula centered around the port city of Pusan.

The Department of the Army meanwhile moved quickly to correct the imbalance in armor, alerting three medium tank battalions for immediate deployment to Korea. Arriving on 7 August 1950, they immediately off-loaded and deployed to support operations around the Pusan Perimeter. During the remainder of the month, further armor reinforcements arrived as well. By the end of August, the U.S. Army had five tank battalions, four regimental tank companies, and approximately 30 light reconnaissance tanks in Korea. At this point American tanks outnumbered the enemy's by an estimated five to one ratio.<sup>8</sup>

The Eighth Army's eventual defeat of the North Korean army at the Pusan Perimeter, of course, stemmed from American air power, the arrival of more infantry units from the continental United States, and 3.5-inch rocket launchers for the infantry to use against North Korean tanks. American tank units, however, played a useful role, normally at company and platoon levels as part of tank-infantry task forces. Later, whether in offensive operations during the

drive to the Yalu, delaying and withdrawal actions after the Chinese Communist intervention, limited offensives in the autumn of 1951, and during the static fighting that marked the last two years of the war, they would continue to play a vital role in U.S. Army operations in Korea through the remainder of the war.

Armor units established a useful role for themselves in the early stages of direct American involvement in Vietnam as well. The commanders of two of the first divisions to deploy to Vietnam - Major General Jonathan O. Seaman of the 1st Infantry Division and Major General Frederick C. Weyand of the 25th Infantry Division - quickly saw the potential utility of armored and cavalry units in Vietnam. They actively sought to deploy their tanks and mechanized units to Vietnam and employ them in combat, despite resistance from staff planners in both Department of the Army and MACV. Eventually, Seaman and Weyand won their point. Their armor and mechanized units all later took part in significant and frequently successful mounted operations in South Vietnam.<sup>2</sup>

Despite orienting much of its training and its tactical doctrine toward a World War II, European-style battlefield, the U.S. Army over the past forty years has fought under conditions that differed from what its doctrine assumed. One of these conditions has been political restrictions and limitations on the use of military force. In 1952, a study

group at Ft. Knox, Kentucky compiled an account of armored actions in Korea during the first year of the war. One conclusion that the group reached was that "any action subsequent to the beginning of the peace talks at Kaesong took place under such unnatural restrictions as to be invalid for application to normal combat operations."<sup>10</sup> Yet it is precisely such "unnatural restrictions" that have characterized American military employment over the past forty years, and have in a sense *become* the norm.

While the interests at stake in any war which would pit Americans and their NATO allies against Soviet and Soviet-bloc nations certainly would appear to be the most vital to the United States, such a war has not occurred. Instead, the pattern of American military involvement since World War II has been one of interventions with limited political objectives, limiting constraints on the applicability of its military power, in terrain far more constricting than the more open, dry, and relatively flat terrain of central Europe. These conditions have affected the manner in which American combat units, particularly armor units, have viewed the best or most correct manner of employing their forces.

In any war, armies find that they must adapt their tactics to some degree to terrain, the nature of the enemy forces, the effectiveness of enemy countermeasures, and a host of other factors. American units in the Korean and Vietnam wars were no exceptions. In both situations, how

tank and mechanized units adapted and employed their forces is particularly important. While the United States continues to maintain a vital interest in preserving Western Europe from any possible Soviet encroachment, any future wars it becomes involved in will be more likely to occur somewhere else in the world. Units that fought in Korea and Vietnam fought under conditions and circumstances which differed significantly from the mobile, fluid, heavily mechanized environment of Europe. Armor units must anticipate that future wars may also occur under restrictive political constraints and terrain. It is useful, therefore, to examine the employment and effectiveness of armor units in those conflicts in order to better determine how they might best be used in future wars.

The intent of this paper is to present, analyze, and compare the tactical employment and the effectiveness of American armor and mechanized units during the Korean and Vietnam wars. Certainly in neither the Korean nor the Vietnam conflicts can it be said that armor units were dominant forces on the battlefield. In both conflicts the terrain was restrictive, and enemy tactics made the full use of armor difficult. Each war saw political restrictions that precluded many armor employment techniques. Yet in each of these wars, limited as they were in terms of terrain, political considerations, and strategic objectives, units that were able to employ combined arms tactics enjoyed

greater battlefield success. Armor units, even in what were largely support or supplementary roles, enhanced battlefield success in those areas (and there were many) in which they could operate. Furthermore, armor and mechanized units demonstrated that they could perform a variety of missions well, though a great percentage of those missions involved modified tactical employment that did not fit conventional or official concepts of armor doctrine.

The term "armor", which will be used frequently in this analysis, applies to units which generally fought mounted in vehicles with armor protection. In Korea, the term applies almost exclusively to tanks and tank units, since tank crewmen were virtually the only American soldiers that fought from vehicles rather than on the ground. Infantry units moved by foot or by wheeled vehicles (or, occasionally, on the outside of tanks), and fought dismounted.

In Vietnam, however, many units fought mounted, from tank battalions to armored cavalry squadrons and mechanized infantry units on occasion. Tank units generally fought with M48A3 tanks early in the war, but later received M60's. Cavalry units, however, largely fought with the M113 Armored Personnel Carrier (APC) which they modified by attaching gun shields for its .50-caliber machine gun and two side-mounted M60 machine guns. These modified vehicles were commonly

known as ACAV's (short for armored cavalry assault vehicles) in many cavalry units, particularly the 11th Armored Cavalry Regiment.<sup>11</sup> The ACAV's weighed approximately 13 tons while M60 tanks weighed 52 tons or more, giving the ACAV's the ability to move cross-country in areas that were untrafficable to tanks.<sup>12</sup> Using the lighter ACAV's allowed cavalry units to bring some of the firepower, armor protection, and speed of tanks into those areas where tanks were roadbound. In fact, many observers believed that the M113 became "the main battle tank of the Vietnam War."<sup>13</sup> Thus, Vietnam saw some tactical innovations that blurred previous distinctions between the roles of infantry, armor, and cavalry. The scope of this paper will include all units that fought mounted, although it will focus greater attention on armor, cavalry, or combined arms units in Vietnam that sought to employ tanks in their operations.

In any war, there are numerous levels at which military actions and performance are addressed, ranging from theater or army level down to the individual soldier. In both the Korean and Vietnam wars, armor formations on a mass scale were a rarity. The majority of actions involving tanks and armored vehicles occurred at task force level (a battalion-sized combined arms force) or lower, with significant actions often occurring as low as platoon level. Actions discussed and analyzed here, therefore, will concern platoon, company, or task force level operations.

This assessment of American armor tactics and effectiveness in wars not obviously suited for tanks will begin with an overview of American tactical doctrine and traditional views of armor employment. It will also outline those factors which directly affected armor use in Korea and Vietnam and caused tactical modifications - the weather, the extremes of terrain, the enemy and his tactics and characteristics, and the political constraints which affected strategy and influenced offensive ground operations in both wars.

American ground operations in both wars, for the purposes of comparison, will be considered in three categories - offensive operations; armor or mounted units in the defense; and security or rear area missions. Each of these three areas will be discussed in turn, with the aim being to establish what role armor units played, the tactical techniques they used and why they used them, and their effectiveness. Most of the focus on the Korean conflict will be on the period after the Chinese intervention in late 1950, when the U.S reconsidered and modified its political objectives. The assessment of armor employment in Vietnam will focus primarily on the 1966-1967 period, when the new tactical techniques emerged and became standard for operations in that country. In some cases, comparing the employment of armor units in Korea to that of a very different type of war in Vietnam may be like



comparing apples to oranges. In many cases, however, common threads emerge.

In both wars, armor units operated effectively in terrain once considered far too restrictive for their use. Though precluded from penetration, exploitation, and pursuit missions into North Vietnam during the Vietnam War and into North Korea during most of the Korean War, American units found ways of employing armor that effectively supported offensive operations while helping to minimize loss of life among U.S. forces. In defensive operations, armor mobility, firepower, and sustainability under fire likewise helped to reduce American casualties and to increase the effectiveness of American resistance in both conflicts. Infantry units carried the most of the fighting burden in both wars, but invariably achieved greater success when complemented by armor support. In short, when combined arms efforts were possible they were often very successful, and they were possible more frequently than initially expected in both wars.

## Notes for Chapter One

<sup>1</sup>James F. Schnabel, *The United States Army in the Korean War, Volume 3. Policy and Direction: The First Year* (Washington, D.C.: Department of the Army, 1972), p. 36.

<sup>2</sup>T.R. Fehrenbach, *This Kind of War: A Study in Unpreparedness* (New York: Macmillan, 1963), p. 203.

<sup>3</sup>Donn A. Starry, *Mounted Combat in Vietnam* (Washington, D.C.: Department of the Army, 1978), p. 55.

<sup>4</sup>*Ibid.*, p. 56.

<sup>5</sup>*Ibid.*, p. 56.

<sup>6</sup>*Ibid.*, p. v.

<sup>7</sup>Roy C. Appleman, *The United States Army in the Korean War, Volume 1. South to the Nakdong, North to the Yalu: June-November 1950* (Washington, D.C.: Department of the Army, 1961), p. 50.

<sup>8</sup>*Ibid.*, p. 381.

<sup>9</sup>Starry, *Mounted Combat*, pp. 57-58.

<sup>10</sup>U.S. Army Armor School, "Employment of Armor in Korea: The First Year, Volume I," report by Committee 11, Armor Officers Advanced Course, 1951-1952. (Ft. Knox, Ky.: U.S. Army Armor School, May, 1952), p. 2.

<sup>11</sup>Roy W. Farley, "Blackhorse Report II", *Armor* 77, (March-April 1968), p. 6.

<sup>12</sup>United States Army, Vietnam, "Mechanized and Armor Combat Operations in Vietnam," San Francisco: Department of the Army, 1967, pp. 12-14.

<sup>13</sup>John B. Stockton, speech given at U.S. Army Armor School, Ft. Knox, Ky., 1966. Written copy in Vietnam War documents, United States Army Military History Institute (USAMHI), Carlisle Barracks, Pennsylvania.

## CHAPTER II

### FACTORS LIMITING ARMOR EMPLOYMENT IN KOREA AND VIETNAM

In his *History of the United States Army*, Russell F. Weigley wrote that World War II was a war for which history had prepared the United States Army. In the tradition of meeting the threat of Indian raids on its frontiers, the United States had recognized a clear and dangerous threat to its security, and had mobilized its citizenry and economy in a total effort to quickly crush the threat and then return to normal. Striking against Germany in the most direct manner by driving across France, the United States (and its allies) broke Nazi power. The threat over, the United States sought to return to its pre-war ways.'

Armor forces, and the resulting mobility which they brought to the battlefield, were well-suited to this American way of war. American industrial capabilities could produce huge numbers of armored vehicles. During World War II, armor forces had proved a key element in the demise of the protracted, static, and costly trench warfare of World War I. The German blitzkrieg and Patton's armored spearheads striking across France in 1944 had demonstrated the tremendous potential of the aggressive use of armor

mobility, speed, and firepower in winning decisive and relatively quick results.<sup>2</sup>

In the aftermath of World War II, Army planners found it more difficult than in the past to formulate doctrine, particularly armor doctrine. One reason was the monopoly on atomic weapons that the United States enjoyed through most of the late 1940's, which led many to doubt whether large-scale ground forces would be necessary in future wars. Attempting to demonstrate that the need still existed, the Army conducted a series of postwar conferences, with the goal to improve its weapons, tactics, and organization. Reflecting the results of these conferences, the 1949 *Field Service Regulations* (Field Manual 100-5) expanded the scope of Army doctrine to include operations in towns, heavily wooded areas, mountains, extreme cold, jungle, and desert. It acknowledged that the basic principles of combat would continue to apply as they did to conventional operations. However, it did not specifically outline to what extent tactics might have to be modified, nor how armor forces would be employed in such environments, if at all.<sup>3</sup>

As the 1940's drew to a close it seemed more likely that any future ground war might well occur on the European continent, as had the United States' last two wars. Increased tensions with the Soviet Union arising from the Cold War, and the widening rift between the Eastern and Western blocs in Europe increased concerns over Western

European security. Large-scale conventional operations in Europe became the center of the Army's concerns, and its doctrine accordingly had begun to focus on European-style warfare similar to that of World War II.<sup>4</sup>

The experiences of World War II had stressed offensive action and the use of maneuver and overwhelming firepower to shatter the enemy's ability to continue coherent, effective combat operations. Attrition and the seizure of terrain were not objectives in and of themselves; their chief value was in how much they contributed to the destruction of the enemy's forces. In the defense, the object was merely to gain time to develop favorable conditions for offensive operations.<sup>5</sup> This doctrine relied on the tank to provide the maneuver and shock action necessary to achieve penetration of the enemy's lines, and then to conduct exploitation and pursuit operations to achieve the final destruction of his forces. The model was the Normandy campaign of 1944, in which infantry units supported by tanks created or found the necessary weak points in the enemy's defenses. Highly mobile armor formations then wreaked destruction and confusion in the enemy's rear areas.<sup>6</sup>

During the Korean War, this doctrine proved applicable during the first phase of the war before the Chinese Communist Forces (CCF) intervention.<sup>7</sup> However, after the first year of combat the political conditions of the war changed, and the standard American way of conducting combat

operations had to be modified as the objectives of the war itself shifted. In the Vietnam war, the conventional American way of waging war proved even more unsuitable for the conditions under which the war had to be fought.

After World War II, the Army focused considerable attention on the employment of tanks and the modification of unit organizations to promote more combined arms operations. Armor and infantry conferences which met during 1946 had concluded that "the best antitank weapon was a better tank," a conclusion shared by a War Department Board on army equipment headed by General Joseph W. Stilwell.<sup>9</sup> The General Board of the United States Forces in the European Theater also concluded from studies of World War II battles that "the medium tank is the best antitank weapon."<sup>9</sup> This general unanimity concerning the value and role of tanks in conventional operations was instrumental in the reorganization of unit tables of organization which began to occur in the late 1940's. Reflecting a post-World War II evaluation that more tanks were required in infantry divisions and regiments, the Army had placed an organic tank battalion in each infantry division, and also gave each infantry regiment its own tank company.<sup>10</sup> Since no armor divisions deployed to Korea, American tank units that fought there belonged either to divisional tank battalions or regimental tank companies.

Tank companies, whether assigned to a divisional tank battalion or organic to an infantry regiment, had the same basic organization. A company consisted of seventeen tanks, two assigned to the company's headquarters section and five tanks to each of the company's three platoons. A majority of the units were assigned M26, M46, or M4A3E8 medium tanks, with a crew of five assigned to each tank. M26's and M46's carried a 90-mm main gun, while the older M4A3E8's had a smaller 76-mm gun. All tanks carried a minimum of two machine guns, one mounted coaxially with the main gun and another mounted on top of the tank and fire independently by the tank commander or the loader. Some units mounted two machine guns on the turret, one each for the loader and the tank commander.<sup>11</sup> As a rule, tank platoons could operate independently from the company headquarters, particularly if attached out to support a particular infantry battalion or company. Tanks were not to be employed singly or in any grouping smaller than platoon.<sup>12</sup>

The reorganization was closely followed by the introduction of new versions of Field Manuals (FM's) outlining the doctrinal employment of tank companies and battalions within infantry divisions. FM 7-35, titled *Tank Company, Infantry Regiment* and dated June, 1949 indicated that the regimental commander would have considerable leeway in employing his organic tank company, stating that "the commander determines . . . whether the action should

involve infantry supported by tanks or tanks supported by infantry."<sup>13</sup> Doctrinally he was permitted to employ tank platoons separately in support of individual battalions, or he could employ the entire tank company as a unit. FM 7-35 also outlined the formation of tank-infantry teams as well, cautioning only that "one platoon or one company of infantry combined with one platoon of tanks is normally the smallest effective team."<sup>14</sup> In short, despite an overall orientation by army doctrinal planners toward a European-style conventional war, the small unit doctrine was suitable for employment in a number of environments and tactical situations since it gave commanders at regimental level and lower considerable flexibility to tailor forces to the situation at hand. If the flexibility was there, however, there was little in either FM 5-100, FM 7-35, or in FM 17-32 (*Tank Platoon and Tank Company*) that specifically outlined how U.S. tank units were to operate in the extreme cold and rugged mountains in which American tank units found themselves fighting in Korea.

Tables of organization and corresponding doctrine were one thing; actual combat readiness and training levels were something else in 1950. The first units to deploy to Korea after the North Korean attack - the 24th Infantry Division, the 25th Infantry Division, the 1st Cavalry Division, and the 7th Infantry Division, all assigned to the Far East Command and stationed in Japan - had no medium tanks readily



available. Occupation forces, they were skeleton units with much of their organic equipment, to include their tanks, either deleted or in storage.<sup>15</sup> Thus, the initial infantry units to deploy to Korea went without tanks, and thereby lost a critical element of combined arms operations. The lack of medium tanks - the best antitank weapon according to existing doctrine - severely hindered American forces in Korea during July and early August of 1950 as they frequently failed to halt North Korean advances. A few units had M24 light tanks, but they proved no match for the Russian-built T-34 tanks that spearheaded the North Korean drive.<sup>16</sup>

American units went into the Vietnam War similarly unprepared for the skillful employment of armor assets. For one thing, U.S. Army doctrine remained oriented toward a European-style conventional war, ignoring mounted combat in other areas and in other terrain. Many saw the Korean experience as an aberration; limited warfare was still the exception rather than the rule. Not everyone felt this way. During the early 1960's concern for "limited contingencies" increased markedly, particularly when the Kennedy administration sought to achieve a "two and a half war" capability in which the "half war" involved low intensity, unconventional operations against insurgencies. However, this "half war" was viewed as an inclusive war, one which

could be fought with forces and systems sized, organized, and supported to meet a major, conventional contingency.<sup>17</sup> As a result, the force structure and the doctrine of the American army, particularly the armor branch, remained focused on combat in European-style terrain against a conventionally equipped army.

One significant development during the interwar period was the mechanization of infantry in the U.S. Army. Between the end of the Korean War and the beginning of the American involvement in Vietnam, the M113 Armored Personnel Carrier (APC) was developed and introduced into the U.S. Army. The APC was designed primarily as a means of carrying infantry soldiers into combat.<sup>18</sup> This new mechanized army was organized differently from the one that had fought in World War II and Korea. Gone was the old system of three infantry battalions in a regiment, each with a fixed quantity of organic tank support. In its place was a more flexible system organized around brigades. Brigades contained a mixture of mechanized infantry and armor battalions, from as few as two to as many as five. Within brigades, forces could be task organized in a manner tailored for particular missions. Divisions normally had three brigades, along with an organic divisional cavalry squadron. Doctrinally, infantry soldiers and cavalry scouts would continue to perform their primary functions dismounted, while tank crewmen remained the only soldiers to fight mounted.<sup>19</sup>

Infantry units still had as one of their primary responsibilities the job of finding or creating opportunities for penetrations and exploitations in the enemy's rear by armor (and now, mechanized) forces, as had been the case since World War II.

An Army reorganization in 1963 allotted each tank battalion three tank companies of seventeen tanks each. As in Korea, each company had three platoons of five tanks each, with two tanks in the company headquarters. Tank battalions now had either M48 or M60 tanks. Mechanized infantry battalions also had three companies, each equipped with fourteen M113's. Divisional cavalry squadrons had three ground cavalry troops (company-sized cavalry units), and an air cavalry troop with helicopters. Armored cavalry regiments (the only units to retain the old regimental organization) contained three armored cavalry squadrons organized similarly to the divisional cavalry, except that their squadrons had a tank company and a 155-mm field artillery battery instead of an air cavalry troop. An air cavalry troop was assigned to each armored cavalry regiment. This was the organization that armored units would have when the United States entered the Vietnam war.<sup>20</sup>

The most recent U.S. Army doctrine at the time of entry into the Vietnam war was published in the February 1962 *Field Service Regulations, FM 100-5 (Operations)*. It oriented heavily on operations in a nuclear battlefield,

again emphasizing the concern with warfare in a European environment. The manual emphasized highly mobile, but dispersed armored and mechanized forces to reduce vulnerability to tactical nuclear weapons. However, expanding on previous versions of FM 100-5, the 1962 revision reflected a somewhat greater concern about operations in special climates and terrain and in "unconventional" warfare. Also, for the first time one entire chapter (Chapter 11) was devoted to military operations against irregular forces. However, this chapter assumed that operations in particularly rugged terrain or against irregular forces should be conducted almost entirely by dismounted infantry units, with armor support unnecessary or unusable under most circumstances.<sup>21</sup>

Armor doctrine reflected the overall Army orientation. The 1957 Field Manual 17-1, *Armor Operations, Small Units* had a little over two pages on armor techniques in guerilla warfare, mostly concerning security.<sup>22</sup> The 1962 version of Field Manual 17-35, *Armored Cavalry Platoon, Troop and Squadron* addressed the problem in much greater detail. It discussed anti-guerilla techniques in a section on rear area security which proved very useful for armored cavalry units in Vietnam, describing tactics for road security, base defense, air reconnaissance, reaction forces, and convoy escort.<sup>23</sup> An updated FM 17-1 included a section on the use of combined arms operations in counter-insurgency missions.

However, most armor officers saw no place for armor units in Vietnam initially and considered it a dismounted infantry war. Even as American units began deploying to Vietnam, the majority of American armor officers continued to train for and prepare for traditional concepts of armor employment in Europe.<sup>24</sup>

In both the Korean and Vietnam wars the basic American army doctrine was similar. This doctrine, which assumed European terrain and a conventionally equipped foe, frequently was unsuitable for the effective use of armor because of the difficulty of the terrain and the nature of the enemy and the tactics he used. In addition, policy limitations in both wars often affected available strategy options, imposing limits on the kind of military objectives that ground forces, and armor units, could be used against. During the "stalemate phase" of the Korean war and throughout the war in Vietnam, American armor and mechanized units had to adapt and develop their own tactical methods in order to make maximum effective use of the armor assets available.

#### Weather and Terrain

The weather and terrain that the Army encountered during the Korean and Vietnam conflicts had a significant effect on the manner in which it could employ armored and mechanized

forces. Terrain and weather characteristics affected more than the movement and maneuverability of tanks and armored vehicles. They influenced vehicle recovery and resupply operations, communications between vehicles and units, and the size of the units which could be effectively employed.<sup>25</sup> The Korean peninsula and the widely varying terrain of Southeast Asia offered some of the most difficult and challenging obstacles that could be faced by armored units.

Virtually all of the land in Korea is mountainous, although there are substantial variances in degree of ruggedness (see figure 2a). A small percentage of the land, particularly in the Western lowlands and the southernmost part of the East Coast lowland district, is gently rolling or flat. Much of the combat in the Korean War, however, occurred in the hills and highland regions, among some of the more rugged terrain in the world. Even in the lowlands, trafficability becomes extremely poor during the rice growing months from June to September, when those areas are flooded by rice farmers. Since arable land is at a premium in Korea, any land not too steep to grow rice on was cultivated. This often meant that if terrain was flat enough to move tanks on, then it was probably covered with rice paddies that restricted movement as well.<sup>26</sup>

Weather conditions often magnified the effects of terrain on armor employment. Hot during the summer, Korea became extremely cold during the winter, particularly from

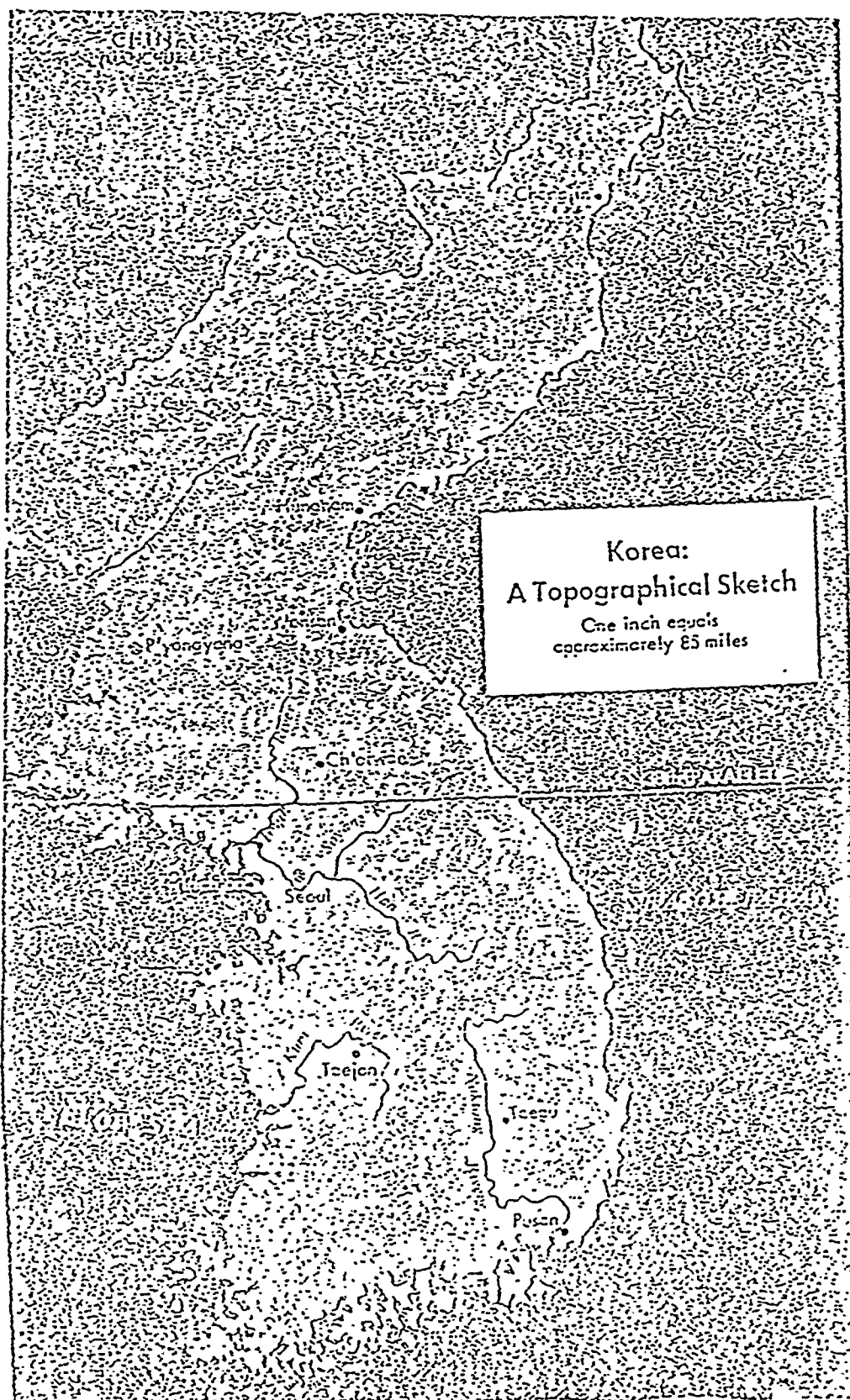


Figure 2a.

December through February. During the warm and hot months, from April through September, Korea encounters its monsoons, torrential rains that impede trafficability further. During the wet season, tank cross-country movement was virtually impossible, and restriction to road networks increased the vulnerability of vehicle columns to enemy fires. The dry season, which also corresponded to the cold seasons, offered greater mobility and cross-country movement, although the accompanying bitter cold made vehicle upkeep and repair much more difficult.<sup>27</sup>

The restrictive terrain made employment of large armor formations during the Korean War futile in most cases. Only limited concentration of fires from tanks could be achieved; rarely could more than a platoon of tanks bring fire to bear on the same target. The difficulty in moving off roads made flank security of armored columns difficult as well. Units in Korea relied heavily on route reconnaissance from the air to assist them in maintaining security during road marches. Although doctrine called for armor formations to strike through identified weak points in enemy lines to achieve penetration and to break through, the highly restrictive terrain in nearly every part of Korea made this impractical in most cases. In a few instances, maneuver of company or battalion sized armored units was possible, but for the most part infantry units performed the maneuver in the attack



while small tank units (normally a platoon) provided a supporting base of fire.<sup>28</sup>

The rugged terrain had a further limiting effect on armor employment. Even when tanks could move without much difficulty, the numerous hills obstructed observation and fields of fire. Tanks had the capability to engage targets one or two thousand meters away, but when terrain masked potential targets from fire and observation, this capability diminished. Those areas which provided maximum observation and fields of fire - i.e., the tops of hills and ridge lines - were generally the most difficult for tanks to reach.

Despite the imposing terrain, however, American units in Korea found that tanks could move better in rugged mountainous terrain than they might have expected. A key was skillful engineer support. In offensive operations, engineers could be used to clear routes of advance for tank units to move into supporting fire positions, and in some cases even armored raid missions were made possible by engineer units expanding routes along stream beds for tanks to move along into enemy-held or observed territory.<sup>29</sup> Armor units demonstrated on numerous occasions that they could operate effectively in terrain that doctrinally was considered completely unsuitable for tanks.

In Vietnam, weather and terrain conditions were markedly different from those in Korea, but in many ways caused even

greater problems for armor employment. In a war without definite front lines, the tactical employment of all types of forces was difficult. Recognizing the unique nature of the war, the Military Assistance Command, Vietnam, early in the war elected to divide South Vietnam into four corps tactical zones (CTZ's). The I Corps sector consisted of the five northernmost provinces of South Vietnam, including about 17% of South Vietnam's land area. The II Corps tactical zone encompassed twelve provinces directly to the South of the I Corps zone. Its area included almost 45% of the land area of South Vietnam. The III Corps tactical zone encompassed the eleven provinces surrounding and including Saigon, about 18% of the land area. The IV Corps tactical zone, in the South, contained the remaining one-fifth of South Vietnam (see figure 2b).<sup>30</sup>

In 1967, after approximately a year and a half of combat experience in Vietnam, a group of over seventy officers under the direction of Major General Arthur L. West conducted an extensive study of mechanized and armor combat operations in Vietnam. The Mechanized and Armor Combat Operations, Vietnam (MACOV) study group studied doctrine, tactics, organization, equipment, and other factors deemed important to armor employment. The study also conducted a detailed evaluation of the terrain in South Vietnam. In its findings, it determined that despite numerous areas in which tracked vehicle movement was difficult, a surprisingly large

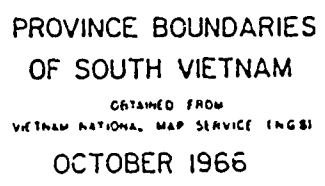


Figure 2b.

amount of the land area in South Vietnam was suitable to at least some form of armor employment.<sup>31</sup>

Much of South Vietnam suffered through two monsoon seasons. The first monsoon - the summer or southwest monsoon - began in May and lasted until September. Winds from the southwest carried moist air that condensed into heavy rainfall as it cooled in the highlands away from the coast. The northeast monsoon began in September, peaked in November, and continued on into February, dropping the largest amount of water on the northeast coast. The wet seasons, according to the MACOV Study, affected armor movement only slightly with the notable exception of the Mekong Delta region in the south.<sup>32</sup>

Each of the CTZ's had peculiar features of terrain and weather that affected armor employment. The I Corps tactical zone consisted of a narrow strip of rice growing land along the coast, and a rugged interior of mountain highlands, deep narrow valleys, and dense tropical vegetation. During the dry season, 44% of the land area in this region was considered "go", or trafficable terrain, to both tanks and armored personnel carriers (APC's). During the wet season, tank movement was restricted to 36% of the region, while APC's could still move on the same 44% of the zone's area as during the dry season. However, the movement rates for APC's and tanks declined from 10-12 kilometers per

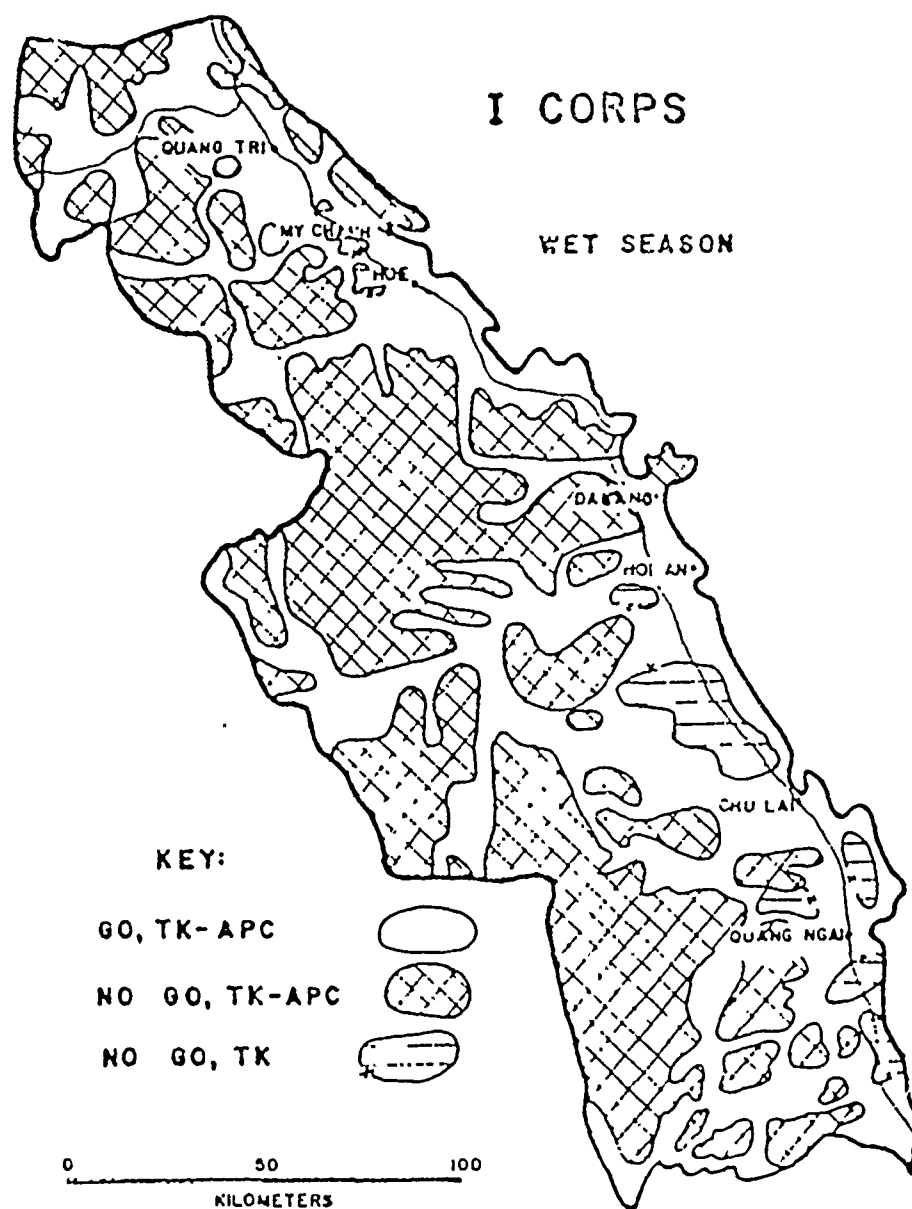


Figure 2c. - I CTZ trafficability during the wet season.

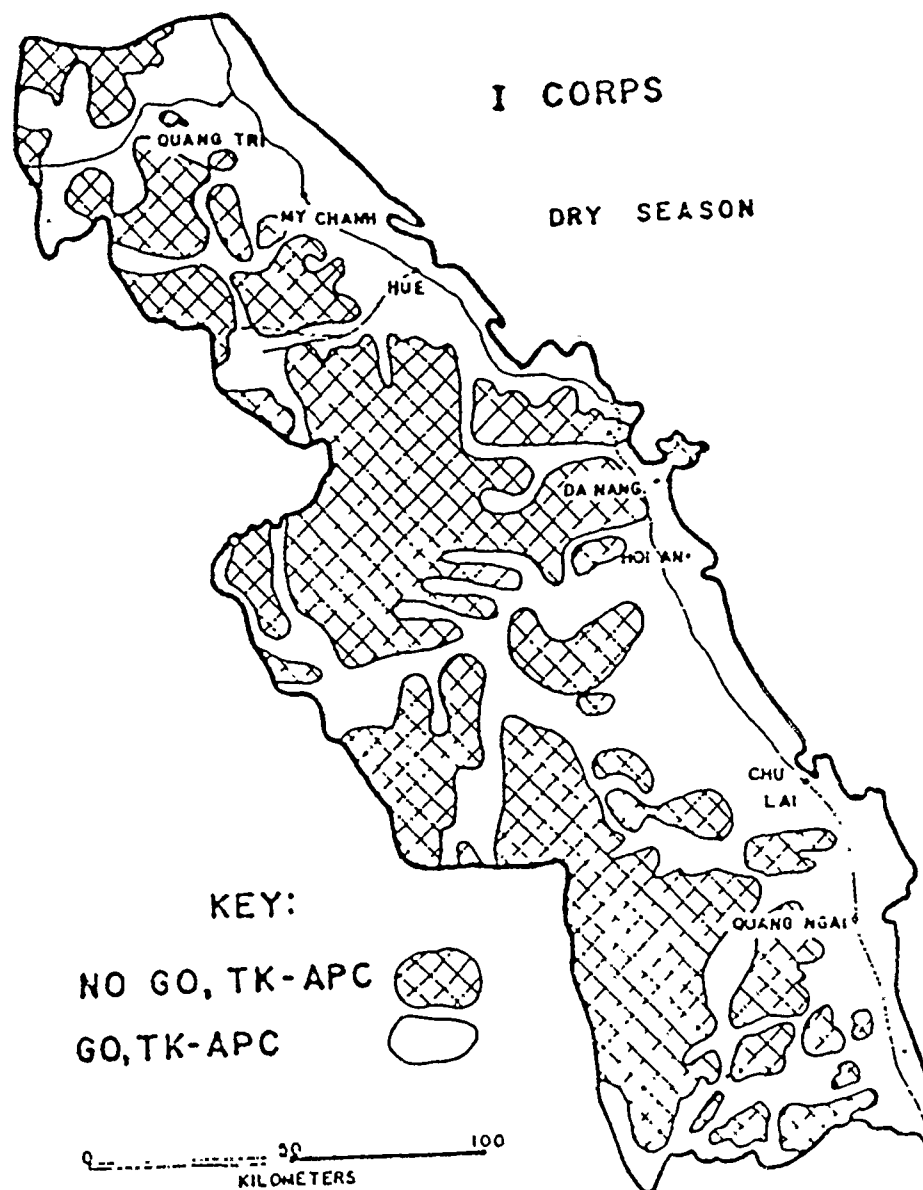


Figure 2d. - I CTZ trafficability during the dry season.

hour (KPH) in the dry season to 4-5 KPH during the wet season (see figures 2c and 2d).<sup>33</sup>

The II Corps tactical zone encompassed an extreme range of terrain, including coastal rice plains in the east, the Annamite Mountains running north to south in the center of the region, and a region of thick forests in the west. A plateau region adjoining Cambodia consisted of rolling terrain, cultivated fields, high grass and bamboo, and scrub forest growth that generally was suitable for armor operations. During the dry season 55% of the II CTZ was trafficable by both tanks and APC's. The wet season imposed virtually no further restrictions on areas available for armor movement, although again movement was slower during the monsoons (see figures 2e and 2f).<sup>34</sup>

The III CTZ was comprised primarily of piedmont terrain, with some highland areas in the north and coastal lowlands with rice fields on the east and southeast. In the far south the area began to exhibit the swampiness of the Mekong Delta region. During the dry season over 90% of the area was "go" terrain for both tanks and APC's. The wet season reduced the trafficable area for tanks to approximately 73%, while APC's could continue to move (at reduced speeds) in the same regions that they operated in during the dry season. As a rule, APC's could navigate in swampy areas even during wet season, while tanks could not due to their far greater weight (see figures 2g and 2h).<sup>35</sup>

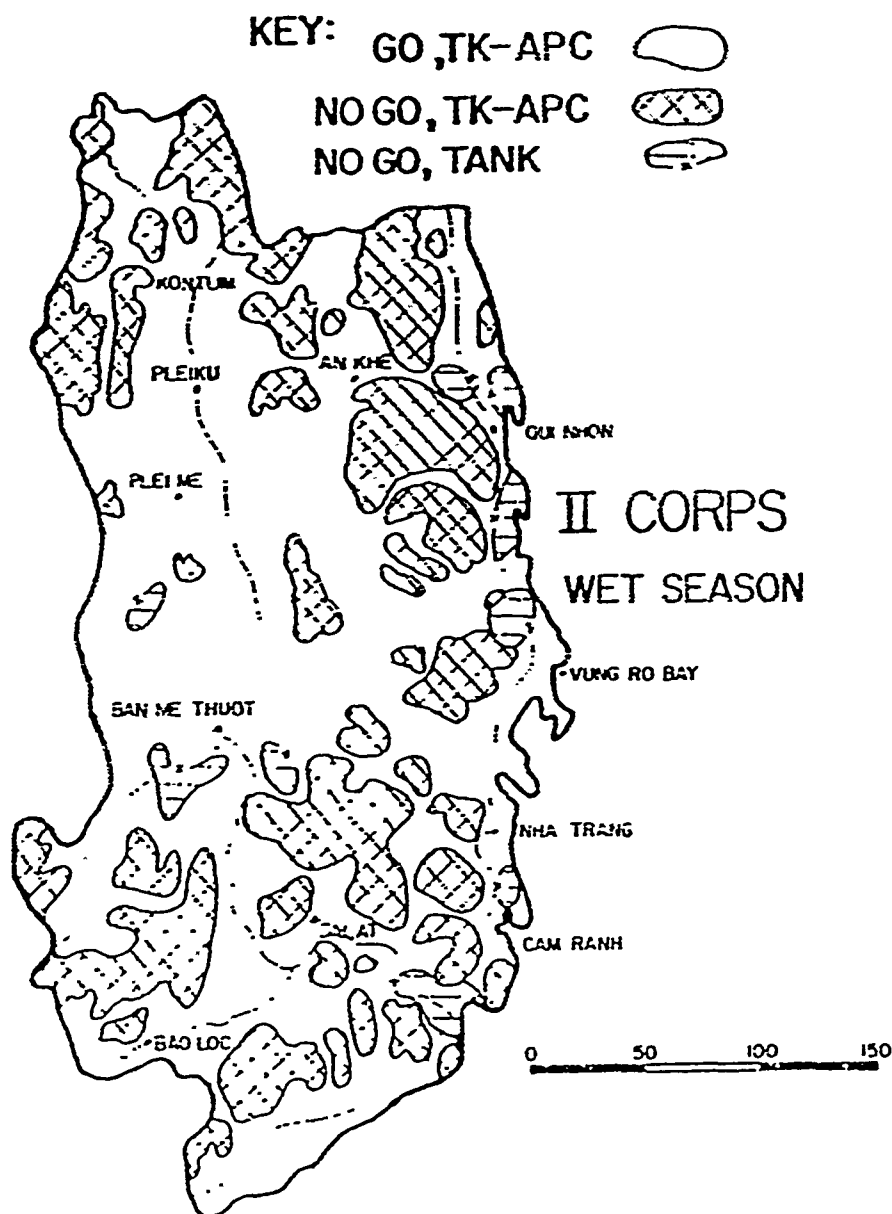


Figure 2e. - II CTZ trafficability during the wet season.



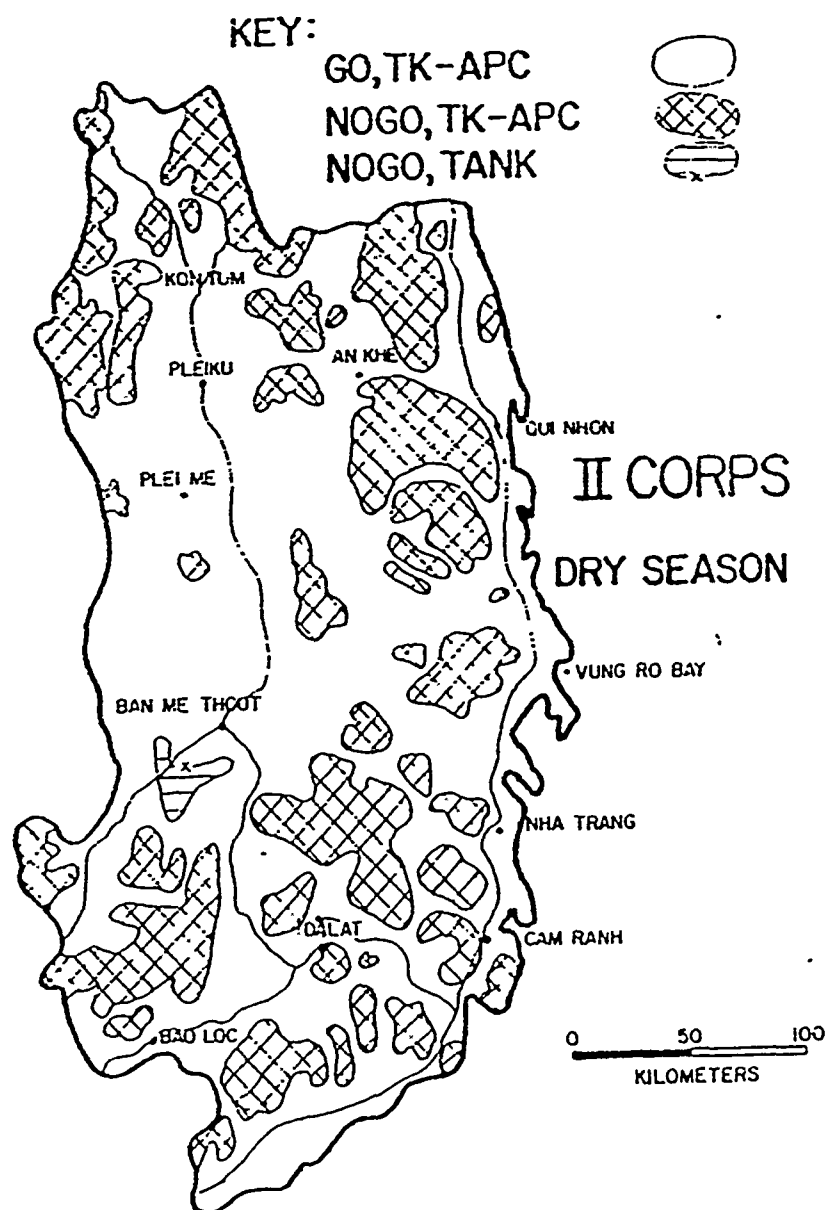


Figure 2f. - II CTZ trafficability during the dry season.

### III CORPS WET SEASON

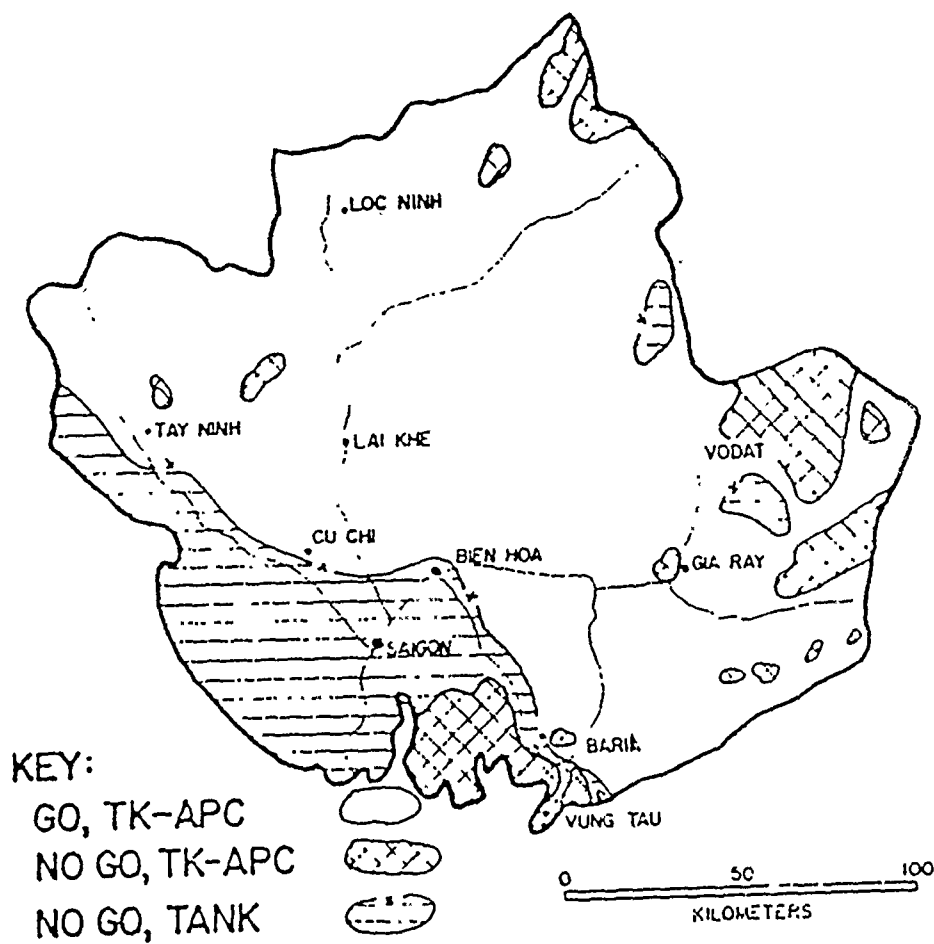


Figure 2g. - III CTZ trafficability during the wet season.

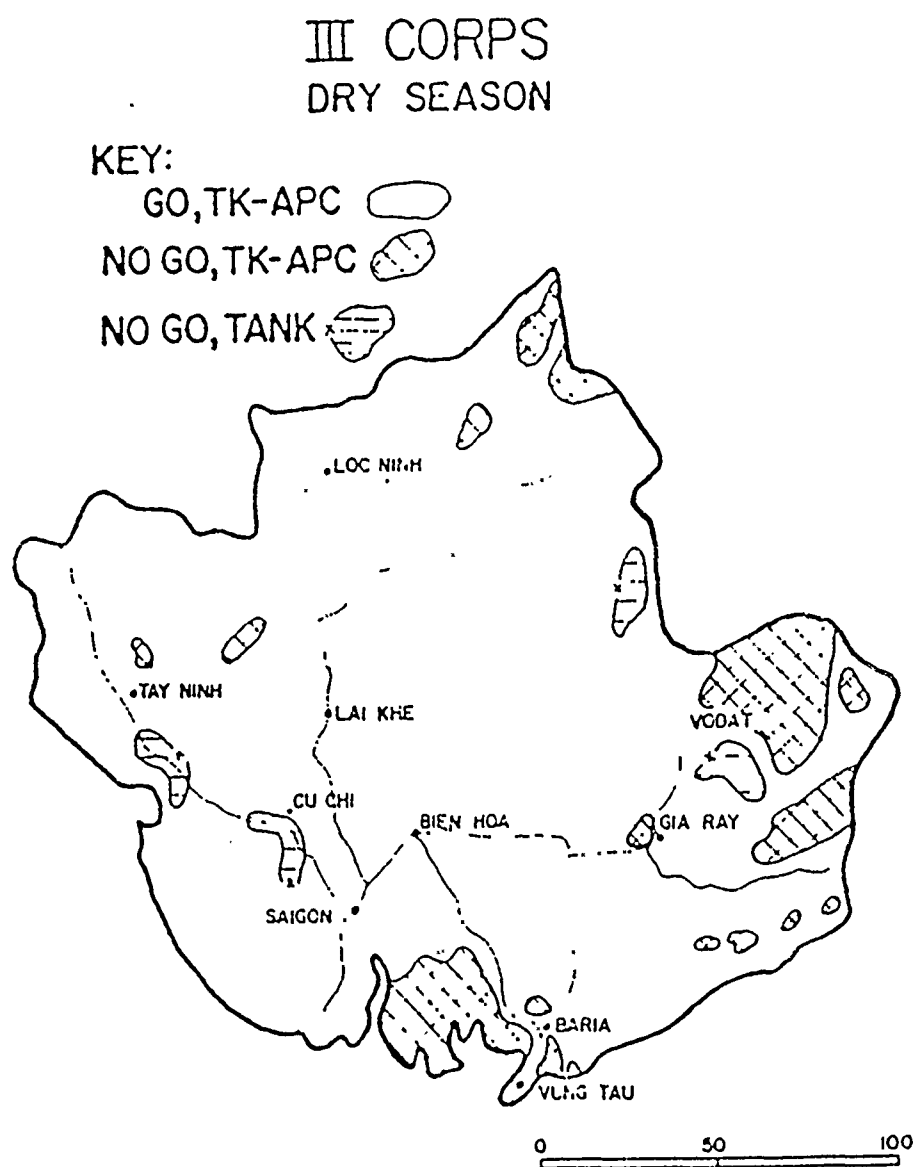


Figure 2h. - III CTZ trafficability during the dry season.

The Mekong River Delta covered virtually all of the IV Corps tactical zone. Rice paddies, swamps, and marshes predominated, with mangrove swamps along the coasts and major streams. The MACOV study determined that tanks could move relatively well during the dry season through over 60% of the region, particularly with engineer support. During the wet season, however, tanks could not operate at all there. APC's during both wet and dry seasons could move through nearly 90% of the zone. The IV CTZ saw the least amount of tank actions during the Vietnam war (see figures 2i and 2j).<sup>36</sup>

Overall, the MACOV study found that tanks with organic support could go in about 60% of South Vietnam during the dry season, and 45% during the wet season. APC's could operate in about 65% of the country year round. The MACOV study concluded that one "striking feature" of U.S. Army operations in Vietnam was that despite being in a tropical land with high mean temperatures, a monsoon climate, and extensive areas inundated with rains and flooding, armored and mechanized units and their equipment showed a much greater utility than many had thought possible at the beginning of the war. These conclusions, reinforced by early combat experiences with armor, encouraged expanded use of armor forces later in the war.<sup>37</sup>

In both Korea and Vietnam American armor units faced examples of some of the more rugged and restrictive terrain

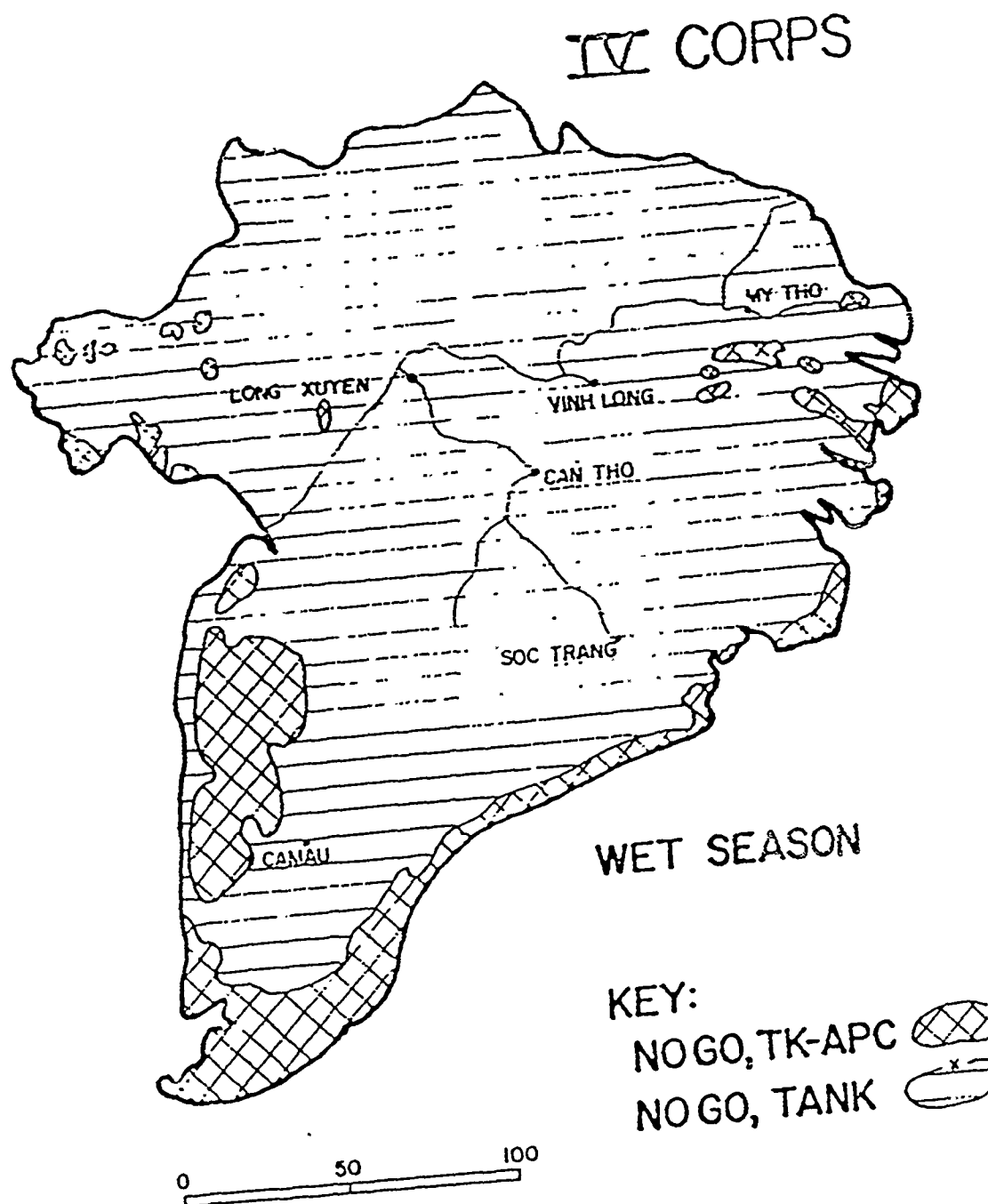


Figure 2i. - IV CTZ trafficability during the wet season.

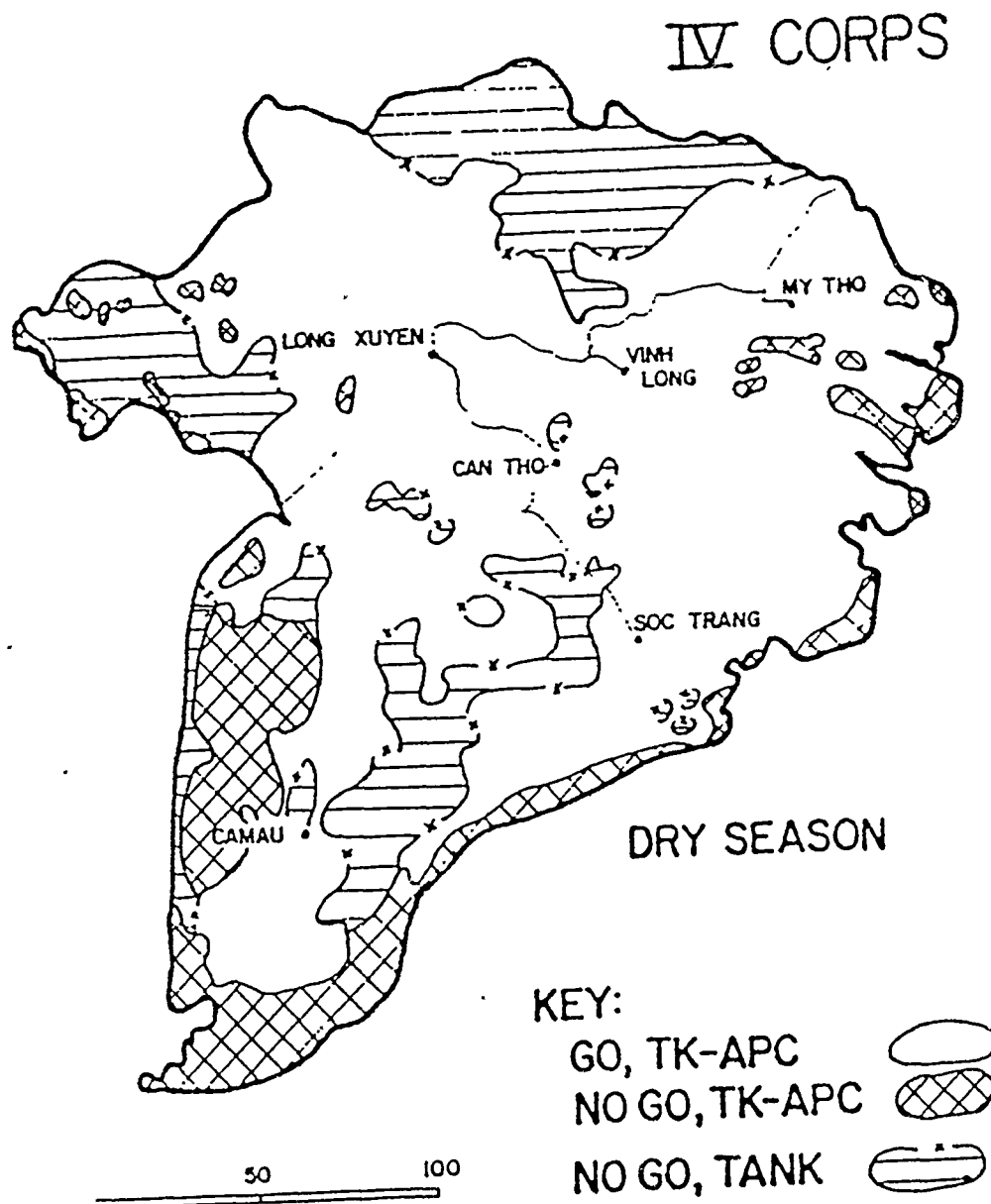


Figure 2j. - IV CTZ trafficability during the dry season.

in the world, terrain which was far different from that assumed or desired in U.S. Army doctrine. Yet while the terrain and the climate in both regions hampered military operations, they did not preclude armor use. As American armor units became more familiar with operating under those circumstances, they found they could still perform well enough to be effective in combat.

### Enemy

In both the Korean and Vietnam conflicts, the American army faced an enemy that normally could not match it in terms of firepower, air support, and quantity and quality of equipment. Except for the first weeks of the Korean War, enemy tanks seldom were a problem. American units could count on air superiority as well with virtual certainty. Nevertheless, the North Korean and Communist Chinese forces in Korea and the Viet Cong and North Vietnamese forces in Southeast Asia proved to be resourceful opponents, employing tactics that had a direct impact on the effectiveness of standard U.S. doctrine for armor employment. Combatting enemies that were not always configured in a European mold and that frequently employed tactics unfamiliar to American soldiers, American armor units had no choice but to adapt their tactical employment methods accordingly.

In Korea, the North Korean People's Army (NKPA) demonstrated a far greater degree of professionalism and sophistication than Americans had expected. During the first phase of the war, they were well equipped with approximately 150 Russian-built T-34 medium tanks, along with substantial artillery support from 122-mm and 76-mm guns and howitzers. Their units initially were modeled upon Soviet divisions, and in the first few weeks of the war American units found themselves in the unaccustomed position of being outgunned. Furthermore, many senior American officers - including the 24th Infantry Division's commander Major General William F. Dean - described North Korean tank tactics as excellent and extremely effective. Dean added further in July, 1950 that "the North Korean soldier and his status of training and the quality of his equipment have been underestimated."<sup>28</sup>

North Korean tactics in the offense were suited toward taking advantage of American weaknesses. Fixing American defenders in place with armored frontal assaults that burst through American positions, the North Koreans then sent their infantry around the flanks and into the rear of U.S. front line units. There they struck command posts, support units, and artillery positions. U.S. infantry units that had been simultaneously penetrated by armor to the front and by-passed by infantry around their flanks often disintegrated. American tankers in light M24 tanks



discovered that their 76-mm guns could not penetrate the T-34's armor and subsequently performed poorly even when not confronted by tanks.<sup>39</sup>

Nevertheless, as the American build-up of forces in Korea progressed, the NKPA steadily lost irreplaceable tanks and artillery. Furthermore, the shortening of American and United Nations lines in the Pusan Perimeter made the enemy's envelopment tactics less effective. After the Inchon envelopment and the Pusan Perimeter breakout, the North Korean army began to collapse.<sup>40</sup> It did not begin to rebuild again until after the Chinese intervention.

The Chinese Communist Forces that intervened in North Korea in full force in November, 1950 were a different enemy than the original NKPA, having relatively little artillery and no tanks whatsoever. Usually their greatest supporting fire came from mortars.<sup>41</sup> They continued to use similar infantry tactics, however. Using probing attacks to identify weak points, they then sought to pour as many troops as possible through the breach to envelop American positions. The CCF also favored night actions, taking advantage of traditional American weakness in combat after dark. The intent, frequently successful, was to cause American units to dissolve once they discovered Chinese units in their rear. The CCF was willing to accept abnormally high casualty rates to achieve this. To avoid overwhelming U.S. firepower, the Chinese almost always

attacked at night, or in periods of bad weather that kept American air support on the ground.<sup>42</sup>

In the defense, particularly when the war settled into a stalemate, the Chinese dug in superbly and camouflaged their positions equally well. They anchored their defenses on elaborate bunker networks that permitted withering mutually supporting fires to the front and secure, underground lines of communication within the defensive position.<sup>43</sup> This, and the extremely rugged terrain, limited the effectiveness of American tank, artillery, and air supporting fires and helped create the need to improvise new means of employing armored forces.

In Vietnam, the U.S. Army found itself fighting mainly against South Vietnamese Viet Cong (VC) insurgents during the first part of its involvement in Vietnam during 1965-66. The insurgents were well-organized, lightly equipped, and moved cross-country on foot. Furthermore, they operated on several levels, consisting of regular or main forces; provincial or local forces; and village military forces or guerrillas. The regular units were frequently organized into companies and battalions capable of large-scale raids. Throughout the early 1960's Communist forces had developed extensive infiltration and supply routes which could move men and materiel in increasing numbers from North Vietnam into the south. Supply rates were substantially affected by

the monsoon season, which had a significant influence on the timing of the enemy's operational initiatives.<sup>44</sup>

The simplicity of Viet Cong and North Vietnamese Army supply requirements made effective supply line interdiction difficult. In this war, there were no rear areas and vital supply routes to interdict, at least not in South Vietnam. This fact hampered doctrinal employment of armor, since there was often nothing of substance to strike against. Where lucrative supply and communications installations did exist across the border in Laos and Cambodia, restrictions imposed by American policy during the war precluded the use of armor offensively against objectives suited for its traditional role.

In 1965 and 1966, as Viet Cong losses increased, North Vietnamese soldiers began to appear in South Vietnam, initially as individual replacements for Viet Cong units and later as full-fledged units of the North Vietnamese Army (NVA). As the war went on, it slowly took on more characteristics of a conventional war between modern armies, although guerrilla actions continued throughout.<sup>45</sup>

Both the Viet Cong and North Vietnamese units habitually avoided direct contact with American units unless it was on their terms. Their tactics reflected heavily the doctrine of Mao Tse-tung. They withdrew and avoided large-scale combat when American forces attacked; harassed when U.S. units defended; attacked when they sensed fatigue or

weariness; and aggressively struck units with lax or reduced security, such as roadbound convoys. Once in decisive contact, VC and NVA soldiers cleverly "hugged" U.S. units, remaining in close contact so that American commanders would be reluctant to bring in artillery and close air support for fear of hitting their own troops. Direct firepower thus assumed a greater importance in combat operations for U.S. units.

The level of conflict varied considerably, with one province perhaps witnessing large-scale mobile attacks while a neighboring province saw no indications of insurgency at all.<sup>46</sup> The U.S. Army in Vietnam faced a very elusive enemy whose exact positions could rarely be accurately fixed. This made it difficult for armor units to take advantage of shock action or concentration of fires, unless the enemy chose to expose himself to the firepower of tanks and APC's. American units were forced to develop new tactics designed to get the enemy in a position where massed fires could be brought to bear on him.

### Summary

In its wars since World War II, the United States army has encountered a variety of enemy forces and terrain that have affected the manner in which it could employ armor. Only the first phase of the Korean War could reasonably be

described as corresponding to the assumptions of American doctrine during this period. Facing a conventionally armed opponent, American combined arms forces supported by air power generally employed existing U.S. doctrine with satisfactory results once superiority in men and materiel was achieved. The rugged and mountainous terrain at this time was virtually the sole factor in limiting the full use of offensive maneuver and firepower in accordance with established American doctrine. The Pusan Perimeter defense, the Inchon envelopment, the September breakout, and the exploitation and pursuit northward all fit into the mobile, fluid sort of warfare which sought total victory through the destruction of the enemy's forces.

With the Chinese intervention, the U.S. Army faced a different enemy. In addition, political conditions changed the nature of the war as well. After December, 1950, the U.S. Army no longer sought total victory and the complete destruction of enemy forces. Instead, its aims were merely to preserve the status quo prior to the war's outbreak in the form of an independent South Korea. Large-scale offensive operations lessened in frequency and results, since any significant changes to the front line dispositions were likely to cause one of the sides to break off truce negotiations and prolong the war. The resulting stalemate forced American combat leaders to look beyond the current

doctrine as it applied to armor employment and to implement new tactics.<sup>47</sup>

In Vietnam too, conventional U.S. doctrine often proved unsatisfactory. Armor could operate in substantial parts of the country but not all. Enemy tactics made it difficult to employ the firepower and shock action of tanks, even in those areas where mobility was satisfactory. A concern over civilian casualties in populated areas also hindered full employment of armor firepower in some instances. A further limitation - the restriction of American forces to South Vietnam - prevented the use of armor in a traditional offensive role such as a strike into North Vietnam.<sup>48</sup> This, plus doctrinal and terrain limitations and the need to address unfamiliar enemy tactics, necessitated corresponding changes in American armor employment tactics. The remainder of this paper will examine what tactical adjustments the U.S. Army made in employing armored units in Korea and Vietnam and will assess whether these tactics were effective.

## Notes for Chapter Two

<sup>1</sup>Russell G. Weigley, *The History of the United States Army* (New York: Macmillan, 1967), p. 480.

<sup>2</sup>*Ibid.*, p. 479.

<sup>3</sup>Maj. Robert A. Doughty, *The Evolution of U.S. Army Tactical Doctrine, 1946-1976* (Ft. Leavenworth: Combat Studies Institute, 1979), pp. 2-3.

<sup>4</sup>*Ibid.*, p. 3.

<sup>5</sup>*Ibid.*, pp. 5-6.

<sup>6</sup>Weigley, *History of the United States Army*, p. 479.

<sup>7</sup>U.S. Army Armor School (USAARMS), "Employment of Armor in Korea: The First Year, Volume I." Committee Report prepared by Committee 11, Armored Officers Advanced Course, 1951-52. (Ft. Knox: U.S. Army Armor School, 1952), pp. 6-8.

<sup>8</sup>Doughty, *Tactical Doctrine*, p. 4.

<sup>9</sup>*Ibid.*, p. 4.

<sup>10</sup>*Ibid.*, p. 4.

<sup>11</sup>USAARMS, "Employment of Armor in Korea," p. 10.

<sup>12</sup>Field Manual (FM) 17-32, *Tank Platoon and Tank Company*, Department of the Army, Washington, D.C., March 1950, p. 54.

<sup>13</sup>FM 7-35, *Tank Company, Infantry Regiment*, Department of the Army, Washington, D.C., June 1949, p. 43.

<sup>14</sup>*Ibid.*, p. 54.

<sup>15</sup>James F. Schnabel, *The United States Army in the Korean War, Volume 3. Policy and Direction: The First Year* (Washington, D.C.: Department of the Army, 1961), p. 46.

<sup>16</sup>USAARMS, "Employment of Armor in Korea," p. 14.

<sup>17</sup>Robert P. Haffa, Jr. *The Half War: Planning U.S. Rapid Deployment Forces to Meet a Limited Contingency, 1960-1963* (Boulder: Westview Press, 1984), p. 4.

<sup>18</sup>United States Army, Vietnam. "Mechanized and Armor Combat Operations in Vietnam," San Francisco, Department of the Army, 28 March 1967, p. 66.

<sup>19</sup>Gen. Donn A. Starry, *Mounted Combat in Vietnam* (Washington, D.C.: Department of the Army, 1978), p. 50.

<sup>20</sup>*Ibid.*, pp. 50-52.

<sup>21</sup>FM 100-5, *Field Service Regulations, Operations*, Department of the Army, Washington, D.C., February 1962, pp. 71-72.

<sup>22</sup>Starry, *Mounted Combat*, p. 50.

<sup>23</sup>FM 17-35, *Armored Cavalry Platoon, Troop, and Squadron*, Department of the Army, Washington, D.C., April 1962, pp. 122-125.

<sup>24</sup>Starry, *Mounted Combat*, p. 51.

<sup>25</sup>USAARMS, "The Effects of Terrain, Hydrographics, and Weather on the Employment of Armor in Korea," Report by Committee 9, Armor Officers Advanced Course, Ft. Knox, March 1952, p. 5.

<sup>26</sup>*Ibid.*, pp. 17-18.

<sup>27</sup>*Ibid.*, pp. 23-25.

<sup>28</sup>*Ibid.*, pp. 37-41.

<sup>29</sup>Sam Freedman, "Tankers at Heartbreak," *Armor* 61 (September-October 1952), pp. 24-27.

<sup>30</sup>USAARMS, "Armor in Vietnam," Special Text 17-1-3, Armor Officers Advanced Course, Ft. Knox, October 1970, pp. 2-1 to 2-18.

<sup>31</sup>Maj. Gen. Arthur L. West and Colonel Donn A. Starry, "Go or No Go in Vietnam," *Armor* 77 (March-April 1968), p. 23.

<sup>32</sup>*Ibid.*, p. 20.

<sup>33</sup>*Ibid.*, pp. 21-22.

<sup>34</sup>*Ibid.*, p. 22.

<sup>35</sup>*Ibid.*, p. 22.

<sup>36</sup>*Ibid.*, p. 23.



<sup>37</sup>*Ibid.*, p. 23.

<sup>38</sup>Schnabel, *Policy and Direction*, p. 84.

<sup>39</sup>Doughty, *Tactical Doctrine*, p. 7.

<sup>40</sup>T.R. Fehrenbach, *This Kind of War: A Study in Unpreparedness* (New York: Macmillan, 1963), pp. 165-167.

<sup>41</sup>*Ibid.*, pp. 300-302.

<sup>42</sup>S.L.A. Marshall, *The River and the Gauntlet* (New York: Morrow, 1953), pp. 56-90.

<sup>43</sup>Doughty, *Tactical Doctrine*, p. 7.

<sup>44</sup>Starry, *Mounted Combat*, p. 14.

<sup>45</sup>*Ibid.*, p. 14.

<sup>46</sup>*Ibid.*, p. 14.

<sup>47</sup>Doughty, *Tactical Doctrine*, p. 8-10.

### CHAPTER III

#### OFFENSIVE ARMOR EMPLOYMENT IN LIMITED ROLES - KOREA AND VIETNAM

The Korean War can be broken into three broad phases. The first phase, essentially fought with conventional objectives against a conventionally equipped enemy, lasted until the destruction of the North Korean army and the subsequent Chinese Communist Forces (CCF) intervention in late November of 1950. The second period extended through the U.N. withdrawal against the Chinese army and the period of U.N. limited offensives which extended through November 1951. The third was the static period of geographic stalemate that continued until the armistice was signed in July 1953.

During each of these periods, the U.S. Army conducted offensive operations of one sort or another. The varying nature of the war and the conditions under which it was fought affected armor employment and tactics accordingly. With regard to the Korean War, the focus of this chapter will be on American armor operations during the last two phases, which were fought under conditions of political limitations that changed the nature and objectives of U.S. military operations. When coupled with the already limiting terrain and weather characteristics of the Korean peninsula,

as well as the unfamiliar nature, composition, and tactics of the Chinese forces, American armor units found it necessary to modify existing doctrine and develop new tactics in order to continue to be able to employ armor assets effectively.

The Vietnam War from the beginning was fought under conditions that limited traditional uses of armor forces. In addition, the nature of the war differed considerably even from the Korean War. From the start U.S. armor and mechanized forces devised tactical employment methods that did not correspond completely to standard doctrine; as in Korea, these methods made it possible for armor units to achieve results that contributed significantly (though not decisively) to American operational performance. These methods will be outlined in this chapter as well. Despite the differences between the two wars, in both instances American armor forces were able to develop methods of offensive tactical employment of armor which were effective even under conditions that were far from ideal for armor employment.

#### Armor Employment in Traditional Offensive Roles

Armor units demonstrated their usefulness in traditional missions in Korea, although modifications had to be made to account for the nature of the terrain. During the first

phase of the war, including the fallback to the Pusan perimeter and the breakout and subsequent drive into North Korea, the American army normally employed its tanks in accordance with existing doctrine. In the offense, tanks were employed whenever possible or available in "armored" missions, such as exploitation or penetration missions. Within infantry regiments, organic tanks were used as per doctrine in small infantry-tank teams, with the tanks generally advancing along major roads or trails and providing supporting and suppressing fire on enemy firing positions. Only terrain hindered the doctrinal employment of tanks. The limited military objectives dictated by the later changes in policy and strategy had not yet become a major influence on offensive armor employment techniques.<sup>1</sup>

Initial assessments of armor performance and usefulness in Korea concluded that armor remained an indispensable part of ground combat, regardless of any limiting conditions under which it had to operate. Such evaluations also agreed that existing U.S. armor employment doctrine was sound, even given the terrain restraints.<sup>2</sup> However, as the nature of the war itself changed, employing armor-infantry tactics in accordance with established doctrine proved less effective. Some of the blame lay in execution problems, but the combination of terrain factors, the nature of the Chinese enemy, and the changing nature of

the war itself had an impact on the effectiveness of armor employed in a traditional mode.

The mobility, speed, and armor protection of tanks made them well suited to missions designed to relieve encircled U.S. units; this had been demonstrated in World War II, for example, by the 4th Armored Division's role in breaking the siege of the 101st Airborne Division at Bastogne. CCF tactics, designed to envelop and bypass strongly held defensive positions, led to several instances of large U.S. units being cut off and encircled during enemy offensives.<sup>3</sup> One such instance was the 23rd Regimental Combat Team's (23rd RCT) encirclement at Chipyeong-ni in February 1951.

The advantage of using armored relief columns was that they could quickly cut through encircling forces to open supply and communications routes to the defenders. The disadvantage was that purely armored forces were ill-suited to hold any routes open for any length of time against enemy counterattacks to re-close the gap, particularly at night. For that, infantry was necessary. Infantry forces were also critical for clearing choke points or areas in which light anti-tank weapons could be employed by enemy infantry to destroy friendly tanks.<sup>4</sup>

At the same time, infantry units did not have the mobility to stay with armored columns whose primary concern was to move as far and as fast as possible to relieve an

isolated unit. Thus, a standard practice in relief missions and bold armored thrusts, as well as other mobility-oriented missions such as exploitation or pursuit, was to have infantry troops stay with the armor by riding on the tanks themselves, then dismounting when under fire or when necessary to clear critical terrain.<sup>5</sup> On the relatively open battlefields of Europe this proved adequate; in Korea it often did not. The experiences of an armored task force - Task Force Crombez - during the relief of the 23rd RCT at Chip'yong-ni illustrated both the utility of armor in such missions, and the difficulty in applying standard tactical techniques for armor-infantry employment in offensive missions in Korea.

Task Force Crombez was given the mission to drive through enemy lines, join the encircled unit, and give it all possible assistance. It initially consisted of the three infantry battalions of the 5th Cavalry regiment, a company of combat engineers, two battalions of field artillery in support, two platoons of organic M4A3 medium tanks, and an attached company of M46 medium tanks. The start point was approximately fifteen miles from the 23d RCT's position, with the attack route along the only available road, a rutted, narrow, secondary road covered with snow. At one roadcut along the route, steep cliffs adjoined both sides of the road. Along the rest of the road

to Chipyeong-ni were steep hills to the left and rice paddies on the right.<sup>6</sup>

Initially, Colonel Marcel Crombez, the task force commander, attempted to achieve the penetration of Chinese forces by a full-scale regimental attack. Encountering strong enemy resistance, Crombez decided that only an armored task force would be able to penetrate the enemy-held territory quickly enough to reach the entrapped units before their resistance crumbled. He then separated his twenty-three tanks to form the core of the force. He ordered a company of infantry to accompany the tanks in order to protect them from enemy infantry at close range, and a team of four combat engineers was attached to clear antitank mines along the route. Speed being the essential thing, the engineers and the infantrymen rode on top of the tanks. The remaining infantry battalions conducted supporting attacks to maintain pressure and prevent the Chinese from pulling forces out of the line to attack the task force.<sup>7</sup>

On two occasions the column was forced to halt momentarily. At a bridge bypass, the enemy dropped mortar shells on the column just as the column halted, while enemy riflemen and machine gunners deployed along the ridge line to the west of the road and poured fire down on the exposed infantrymen on the tank decks. Many dropped off the tanks to take cover. This fact, unknown to Crombez, meant that many troops were left on the side of the road when he

ordered the column to begin moving again.<sup>9</sup> This process was repeated a few miles later. After the second halt, less than seventy out of an original 170 infantrymen remained with the column.<sup>9</sup>

The task force continued to receive enemy fire of increasing intensity through the rest of the march. About two-thirds of the way to Chipyeong-ni, Crombez decided that wheeled traffic would be unable to get through, and ordered accompanying supply trucks and ambulances to hold up and await further instructions. At the roadcut, enemy soldiers looking down on the column from cliffs on both sides of the road fired rockets and threw satchel charges down at the tanks, further thinning out the infantrymen riding on the tanks and knocking out the one remaining wheeled vehicle, a 2½-ton truck that had been picking up wounded soldiers along the way. At dusk, the column finally entered the perimeter at Chipyeong-ni, with only twenty-three infantrymen remaining. Crombez, who had planned to return to his regiment after the relief, was forced to keep the remainder of his task force at Chipyeong-ni since he could not risk taking unprotected tanks back through enemy territory at night.<sup>10</sup>

Task Force Crombez accomplished its objective, but at a heavy cost. The episode demonstrated the danger of transporting infantry units atop tanks, although shortfalls in artillery support along the route contributed



significantly to Task Force Crombez' problems as well. The operation pointed out the need for a means of transporting infantry units into combat that could simultaneously protect them from small arms fire and keep pace with armor vehicles. Near the end of the Korean War, after the war had long become one of static positions and stalemate, some units began to receive armored personnel carriers to meet this need.' Task Force Crombez' experience illustrated the great utility of armor even in conventional roles in Korea, but also indicated how rugged terrain, enemy tactics, and poor internal tank-infantry coordination could seriously undermine the effectiveness of such missions.

Most of American conventional tank operations occurred at small unit level, with individual tanks or platoons providing direct fire support to attacking infantry units in accordance with doctrine in FM 7-35. Even here modifications were necessary, due to the restrictive terrain. Frequently, tanks in support of infantry remained roadbound, unable to move rapidly enough in flooded rice paddies along the sides of roads to deploy in a normal manner. Nevertheless, even with these restrictions tanks could provide effective support, and played an important role during the U.N. counteroffensives in January and May of 1951.

Infantry units stalled due to enemy machine gun fire often called tanks to move forward of the lead infantry

soldiers by as much as six or seven hundred yards, using the relatively impervious tanks to move as close as possible to enemy positions. Their tank machine gun fire suppressed or destroyed the positions, enabling the infantry to move forward to clear out and occupy the positions. One company of the 89th Tank Battalion, given a routine support mission of providing supporting fires to the far side of a river during a crossing operation in March of 1951, exceeded expected performance capabilities by fording a relatively deep river rather than waiting for the planned engineer bridge support. By doing so, it was able to continue supporting the infantry attack with suppressing machine gun and main gun fire on the far side of the river. The unanticipated tank support was the big factor in the success of the crossing operation, according to the battalion commander of the attacking infantry.<sup>12</sup>

In Vietnam, American units found an unfamiliar form of warfare that became known as "area warfare". With no lines to penetrate, no flanks to envelop, and no "rear" areas in the conventional sense, employment of armor units in a conventional manner diminished. As in Korea, the disjointed character of the war and the restrictive terrain made employment of large armor units impractical in many cases. The armor battalions and cavalry squadrons that fought in Vietnam often found their companies parceled out to support infantry brigades or divisions that had no organic tank

support. For a period of several months, the commander of the 2nd Battalion, 34th Armor - one of the two pure tank battalions deployed to Vietnam - had no companies at all directly under his command. Likewise, the headquarters of the 11th Armored Cavalry Regiment experienced periods in which it controlled only its regimental air cavalry troop.<sup>13</sup> Thus, armor units in and of themselves found it difficult to conduct combat operations in accordance with conventional doctrine due to the frequent lack of assets directly under their control.

Infantry and cavalry units did conduct extensive operations that employed tanks in key roles. In these operations, the accepted strengths and abilities of tanks and armored vehicles - mobility, flexibility, firepower, shock action - still played an important role in combat operations, and they were used to take advantage of those capabilities. But armor employment did not always follow the course outlined in standard doctrine. An after-action report of armor-infantry operations conducted in early 1967 declared that armor doctrine "has not changed because of area warfare, however, techniques and methods have."<sup>14</sup> It cited an example that occurred during Operation Manhattan, in which the 11th Armored Cavalry Regiment (11th ACR) conducted an ostensibly conventional operation - crossing a Line of Departure (LD), conducting a hasty river crossing, and establishing two blocking positions. During the entire

operation, the regimental headquarters, support units, and reserve were forward of the line of departure and behind the objectives of the attacking squadrons. As in Korea, armor units made their primary contributions to the war effort in operations that, while by no means divorced from conventional tenets, nevertheless relied heavily on innovative employment techniques to meet requirements that U.S. Army doctrine did not address.<sup>15</sup>

#### Armor Employment in Positional Warfare - Korea

In both the Korean and Vietnam wars, infantry units were the "bread and butter" of U.S. ground combat operations. Armor units could and did play a significant role, however, in supporting such operations; occasionally, the role was significant enough that the missions likely would not have been accomplished without the armor support. The combat experiences of American forces in Korea, particularly during the first phase of the war, generally showed existing U.S. infantry-tank doctrine to be sound.<sup>16</sup> Nevertheless, the conditions of limited objectives and stalemate which marked the latter stages of the war created circumstances that did not match the U.S. army's concept of conventional warfare. As a result, U.S. units had to develop new tactical techniques in Korea that differed from doctrinal techniques.

These techniques - employment of tanks in hills and on ridgeline, the use of tanks as "bunker busters," and limited objective armored raids - became hallmarks of U.S. armor employment during the last two and a half years of the war. Like by-the-book doctrinal operations, however, their effectiveness depended almost completely on the level and quality of the coordination between infantry units and the tankers. One example of this was in the execution of techniques developed by U.S. units to attack well-fortified and dug-in Chinese positions in the mountainous terrain of central Korea.

By June of 1951, the tactical situation along most of the line of contact in Korea was relatively static. The U.S. objective in Korea was no longer total victory and destruction of the enemy forces, but to preserve the status quo ante bellum.<sup>17</sup> Up to this point, tank employment had been limited for the most part to where conventional doctrine dictated - along the roads and valleys that were the only places considered flat enough for tanks to operate. Under static conditions, however, old concepts of offensive armor doctrine were less appropriate. U.S. units seldom used tanks in deep penetrations or wide envelopments designed to decisively defeat the enemy. Exploitation and pursuit missions were no longer possible in this sort of limited war either. Infantry and artillery became even more dominant factors in a war of static defensive lines and attrition.

This static warfare, with units remaining in the same positions for longer periods of time, curtailed the ability of tank units to move along roads providing supporting fire to attacking or patrolling infantry. The enemy mined roads more heavily. He also had the time and the opportunity to construct numerous series of antitank ditches. Rice paddies flanking the roads effectively hindered attempts to by-pass these obstacles. Previously limited to the relatively few roads traversing the rugged and mountainous terrain, tanks appeared to be of even more limited use when the opposing forces had the time to obstruct the use of those roads so extensively.<sup>18</sup>

Still, armor units had too many capabilities to ignore. Some units tried new employment techniques. One of the alternate possibilities considered for the use of tanks was to move them up into the hills and mountains along the roads. Here the mobility of tanks certainly would remain restricted, but the observation and fields of fire would improve and their firepower could continue to support infantry operations.<sup>19</sup>

Units in the 70th Tank Battalion, attached to support an infantry regiment in the central mountains near the 38th parallel, adopted such practices during the summer of 1951. Though it was difficult and required skilled drivers, tank platoons were able to work their way up to the tops of the ridgelines. Once there, the tanks could move freely,

particularly during the dry seasons when the ground was firm and dry. Once dug in along ridge tops, individual tanks had observation and fields of fire which could dominate the terrain around them for miles. They could quickly locate enemy positions and take them under fire. Infantry units with close tank support could patrol more aggressively.<sup>20</sup>

Employing tank units in the hills created numerous problems as well. Wear and tear on the tanks themselves was heavy in such operations. To deal with this problem, a unit might use only those tanks with the better suspension systems on the hills, using the remainder in a "road section" that remained on main routes and provided covering fire for those tanks moving up onto the hills. Tanks moving up the hills, and particularly those on top of the hills, provided good targets for enemy antitank fire, although this was a tolerable risk against an enemy that had few antitank weapons and was not particularly skillful in the employment of those it did have.<sup>21</sup> Nevertheless, conducting tank operations in the hills and on the ridgelines expanded the ability of armor units to support combat operations in a war that was becoming more limited in its objectives. The demonstrated ability of tanks to operate with an adequate degree of effectiveness in rugged terrain enabled American units later to attack well fortified and dug-in Chinese positions with badly needed direct-fire support. During

limited offensive operations in September and October of 1951, this support occasionally proved crucial.

In August, 1951, ongoing truce talks had broken off indefinitely. The break gave the U.S. and United Nations forces an opportunity to shorten and improve their defensive line and dispositions, and marked the return to limited offensive operations. With this in mind, and to keep pressure on the enemy, the U.S. army began a series of limited objective attacks in September, with the main effort falling in the X Corps sector near the center of the U.N. lines. The actions that followed became known as "Bloody Ridge" and "Heartbreak Ridge."<sup>22</sup>

During the truce talks the CCF had had the opportunity to anchor their defenses on well-built, camouflaged bunkers which vastly reduced their vulnerability to American artillery and air strikes. As a result, the success of American limited objective attacks depended largely on the ability to destroy or neutralize those bunkers. While the offensive capabilities of tanks were now restricted by the terrain and the nature of the war, tanks were still useful. The armor protection, fire power, and mobility of individual tanks made them valuable in assisting in the destruction of bunkers and other dug-in firing positions. During the limited objective attacks in the autumn of 1951, American tank units operating in the hills of Korea became adept at employing techniques of what became known as "bunker-



busting." Bunker-busting operations, in addition to demonstrating the usefulness of tanks in Korea, illustrated how detailed coordination between participating infantry and supporting tank units enhanced the capabilities of both.<sup>23</sup>

Chinese bunkers were extremely well-constructed, and the CCF employed them extensively along both the main line of resistance (MLR) and the outpost line of resistance (OPLR). The Chinese forces developed their entrenchments and bunkers by tunneling through and under terrain features, then strengthening and reinforcing the resulting cavity from within. Firing openings, or embrasures, were then carved out and reinforced with logs. The Chinese placed the embrasures in positions providing mutual support with other firing positions and bunkers. They then emplaced machine guns or even (rarely) anti-tank guns in these positions.<sup>24</sup>

While the embrasures looked out over the forward slope of the hill, the internal networks and lines of communication were on the reverse slope, or inside the hill itself. The bunkers had great natural strength. In addition, the natural soil and camouflage around the embrasures were not disturbed, making the bunkers extremely difficult to pinpoint from the ground or from the air (although the spoilage generally could be seen on the reverse slope from the air). Detailed planning and smooth coordination were necessary to destroy such emplacements. Through trial and error, American tank crews, NCOs, and

officers developed efficient and effective techniques required to accomplish their "bunker busting" missions in support of U.S. limited objective attacks.<sup>25</sup>

During limited objective assaults in position warfare, identifying precisely the location of enemy bunkers was crucial. Patrols, aerial reconnaissance and photographs, ground observation, and prisoners of war assisted in identifying these positions.<sup>26</sup> Tank crews positioned on the friendly main line of resistance often contributed to the identification effort through direct observation via binoculars or the telescopic gun sights in the tanks. Reconnaissance by fire occasionally caused the enemy to reveal his positions as well.<sup>27</sup>

Once patrols or tanks crews pinpointed the firing embrasures, an armor unit (normally a platoon, occasionally an entire company) occupied firing positions on the line if possible and assumed a sector of responsibility. Any information already gathered about the enemy bunker positions, communications trenches, and observation posts was given to the platoon and passed down to the individual tank crews. Crews dug in their tanks and closed the hatches for protection against enemy mortar fire and direct fire from the bunker positions themselves.<sup>28</sup>

Meanwhile, assaulting infantry units and their supporting tank units began coordinating for the impending attack. Ideally this occurred several days in advance of

the actual assault if time permitted. The first priority then was to remove as much natural growth and camouflage as possible from the areas where bunkers had been identified. Air strikes using napalm, and artillery and mortar fire using high-explosive (HE) quick-fuse and white phosphorus (WP) rounds accomplished this by burning away the growth.<sup>29</sup>

Just before the attacking elements began moving toward their objective, the overwatching tanks fired direct-fire HE delayed fuse or WP rounds into the embrasures, in an effort to create casualties among enemy gun crews and to prevent the enemy from employing effective fire. Since the Chinese in particular normally employed several mutually supporting bunker positions, all needed to be silenced before the assaulting elements could close on the bunkers. Once this was accomplished, the assaulting units moved as quickly as possible toward the now-silenced bunkers, accompanied by tanks if terrain permitted. This was not easy, since the assaulting units almost invariably had heavy small arms fire to contend with as well.<sup>30</sup>

The tanks, employed as far forward as possible, then began the process of destroying the bunkers before the enemy could reoccupy and reestablish the position. Tank crews usually employed a "pick and shovel" technique to destroy Chinese bunkers. First they delivered armor piercing kinetic energy rounds at the top of an embrasure, and then again at a point from three to five feet below it. The

purpose was to use the high speed and penetrating power of these rounds to smash into the floor and the roof of the bunker at angles which would loosen the earth and logs. Then the tanks followed up with HE rounds to blow the loosened material into the bunker's gun chamber, causing a partial or complete collapse of the forward portions of the bunker at the embrasure.<sup>31</sup>

The bunker-busting process allowed attacking infantry to fight without facing overwhelming crew-served automatic weapons fire from bunkers which could not be suppressed by artillery. The task of rooting out enemy troops from the rear channels and trenches remained a difficult one which was often, though not always, impossible for friendly tanks to support. After the destruction of the forward embrasures of the bunkers, tanks continued to provide harassing fire against them to prevent enemy soldiers from reopening the positions until friendly infantry troops overran and occupied the objective.<sup>32</sup>

The task of "bunker busting" required extensive cooperation and coordination among infantry and tank units, and became an important part of armor operations in Korea. The 72nd Tank Battalion of the 2nd Infantry Division, which had been instrumental in developing American bunker destruction techniques, was particularly active in bunker and outpost suppression and destruction missions.<sup>33</sup> These actions, beginning during the Bloody Ridge-Heartbreak Ridge

battles, continued through the stalemate phase of the war as well. As the truce talks resumed and wore on, most armor units assumed similar missions. It was largely in this respect that tanks remained a key ingredient in the combat operations of the U.S. Army during the positional warfare stalemate from 1951 until the end of the war.<sup>34</sup>

Another armor employment method used during the Korean War was the armored raid. American forces used armored raids to varying degrees of success throughout the course of the Korean war. Doctrinally, U.S. units used raids in fluid situations in which friendly forces held the initiative but the enemy situation was unclear. In such situations, aggressively pushing out armored forces served to rapidly reestablish contact with the enemy. Furthermore, the armored force could continue on as the spearhead of a penetration or envelopment if open flanks or weaknesses in the enemy's defenses were discovered.<sup>35</sup>

During the first year of the war American units employed these tactics with some success, particularly in conjunction with the exploitation and pursuit northward in late September and October of 1950. By mid-1951, however, the restrictions on unlimited offensive action and deep penetrations as a result of the truce talks imposed constraints on the customary use of armor for such roles. The loss of the opportunity for decisive offensive action meant that armor tactics would have to be modified to comply

with these limits. As a result, the use of limited armored raids against selected targets of opportunity became common.

The purpose of armored raids was similar to that of standard infantry patrolling: to gain information, to retain an aggressive spirit among the soldiers, to maintain tactical initiative, to inflict casualties, and to damage enemy morale.<sup>36</sup> In October and November of 1951, X Corps directed that raiding missions with armor elements be conducted to keep the Chinese and North Korean forces off balance after the heavy fighting in September and early October. U.S. units assigned these missions invariably conducted them during daylight hours, to enhance visibility, to reduce vulnerability to dismounted enemy infantry at night, and so that supporting tactical air could be employed.<sup>37</sup>

One of the most successful of these raids was conducted by the 72nd Tank Battalion from October 10-13, 1951 at Mundung-ni, just north of "Heartbreak Ridge." Using engineers to clear the shell-pocked route, a reinforced tank battalion of 68 tanks skirted around the rugged hills along a stream bed to strike at elements of a Chinese division which were preparing to relieve the North Korean units recently driven off of Heartbreak Ridge. "Operation Touchdown" continued for several days, with the task force attacking toward the rear of Chinese forces around Mundung-ni in four separate thrusts, withdrawing to friendly lines

each evening. During the operation the raiding forces deflated a developing Chinese counter-attack aimed at retaking Heartbreak Ridge, and inflicted large numerical losses on the enemy. The battalion reported losing five tanks to mines. The continuous pressure and disruption of operations resulted in the withdrawal of the Chinese units from Mundung-ni at the end of the action.<sup>38</sup> These raids demonstrated the utility of using the offensive capabilities of armor units to maintain an offensive orientation and the initiative even under operational conditions that precluded large-scale offensives.

The 7th Infantry Division relieved the 2nd Division in late October, 1951 and began its own campaign of armored raids. Its experiences near Mundung-ni in November, 1951 highlighted the advantages gained by frequently launching armored raids, but also reflected problems that such tactics incurred. Each operation incorporated minutely detailed and coordinated air and artillery support planning. Raiding forces also needed engineers to clear and repair the route for the tanks; often the engineers could expect to work directly under Chinese or North Korean small arms fire. Artillery forward observer parties infiltrated as far forward as possible along the OPLR to assist in directing supporting artillery fires. Infantry and tank units trained together prior to each mission to enhance smooth cooperation and mutual support during the raid.<sup>39</sup>

The results were often good, sometimes not. Frequently, armored raiding forces inflicted heavy casualties, particularly if surprise was achieved. However, since the 7th Division conducted such missions almost daily during the latter part of 1951, the cost became increasingly high as the Chinese began to anticipate the raids. On virtually every mission mines or anti-tank fire disabled U.S. tanks. During November, 1951, the 7th Division lost a total of 26 tanks, although the division eventually recovered and repaired all but six of them. At the same time, the campaign had several positive results. The raids forced the Chinese to employ their artillery well behind their MLR, making it difficult for them to fire harassment and interdiction fires behind the American lines. The raids also were effective in keeping the enemy off-balance enough to prevent significant offensive actions on his part.<sup>40</sup>

The U.S. Army continued to employ armored raids throughout the war, though much less frequently than it had during the autumn of 1951. The results were not uniformly spectacular. Armored raiding units lost some potential effectiveness and surprise due to the constricting terrain, which limited routes of advance and often required intense engineer preparation before tanks could move at all. Also, while artillery support was almost invariably reliable, timely, and accurate on these missions, coordinating and employing supporting close air fire was a problem which the



Army never adequately solved during the war. Finally, the more frequently such missions occurred in any given sector, the less effective and more costly they became.

However, considering the conditions under which the war was fought, limited objective armored raids were a valuable and potentially effective way of employing armor offensively. Armored raids could and did disrupt enemy operations, inflicted numerous enemy casualties, and were valuable in gaining information about the opposing forces. The conduct of armored raids during the positional warfare of 1951 and later helped U.S. Army forces retain a degree of initiative at a relatively low cost which was necessary, even in a war of stalemate, to maintain combat effectiveness.

#### Armor Employment in Non-traditional Roles - Vietnam

The use of armor in mass to achieve penetration or envelopment of enemy lines was not normally feasible during the Vietnam war. Furthermore, since the war was one without front lines and involved an enemy that usually did not dig extensive defensive fortifications, the infantry-armor "bunker-busting" outlined above was inapplicable. American units in Vietnam contended instead with what the MACOV study called "area type warfare". Area warfare lacked the relatively firm continuous front lines of the Korean War and

World War II. This, coupled with inadequate intelligence concerning the location and activities of enemy forces, dictated that American units had to expect contact with the enemy "at any time and from any direction." In addition to being multidirectional, this area war was characterized by the prevalence of civilians that could not be identified for certain as being friend or foe. The general goal of U.S. tactical offensive operations was to locate and destroy enemy armed forces within a particular area, rather than to seize or retain terrain objectives.<sup>42</sup>

Armor units had numerous advantages for the area type warfare that characterized combat operations in Vietnam. In contrast to the Korean War, many areas in Vietnam were suitable for the employment of armor units of up to task force (combined arms battalion) size. While the Viet Cong (VC) and North Vietnamese Army (NVA) occasionally acquired and employed antitank weapons such as 57 mm rifles and RPG2 rockets, their antiarmor capability fell far short of a conventionally equipped force. This made it possible for armor units to move close to heavily defended positions and provide effective supporting and suppressing fires that helped infantry units to move close to or on top of those positions more easily.<sup>43</sup> Since VC and NVA positions were not always fixed, finding and then destroying their units during offensive operations was a difficult matter. When VC and NVA forces did choose to prepare defensive positions,

they normally were well-concealed, heavily fortified positions. The techniques developed and employed to clear areas by finding, fixing, and clearing enemy units within a particular zone became known as "search and destroy" operations.<sup>44</sup>

To support the goal of destruction of VC and NVA forces, U.S. units executed "search and destroy" missions frequently from mid-1965 to mid-1969, when Vietnamization began to shift a greater burden of fighting the war onto the South Vietnamese Army. These operations were designed to locate VC installations, destroy their supplies and equipment, and destroy or capture Viet Cong forces within a designated area.<sup>45</sup> This was a difficult task, since VC normally did not fight to retain terrain or to maintain a viable defensive line, and thus could avoid combat except when, given favorable circumstances, they initiated it. Search and destroy operations sought to aggressively establish contact with VC forces with reconnaissance units, create meeting engagements that would fix their units, then rapidly maneuver to maintain the contact, develop the situation, and destroy the force before it could break contact and melt away. In Vietnam, units conducting these search and destroy operations with armor and mechanized units developed techniques that in many respects reversed existing doctrine concerning the roles of armor and infantry units in the offense.<sup>46</sup>

Existing doctrine stated that "in the envelopment the attacking force avoids the enemy's main defensive strength by going around it on the ground or over it by air to seize an objective in his rear." This was done to "disrupt his communications and support, cut his escape routes, and subject him to destruction in position."<sup>47</sup> The preferred method was to find and fix the enemy with dismounted infantry units, using armor units as the enveloping force because of their superior mobility. Since VC and NVA units often sought to avoid being caught "in position" and the objective here was to seek out the "main defensive strength," this doctrine did not appear applicable.<sup>48</sup> Furthermore, with the advent of airmobile infantry, and the hindering effects of Vietnam's terrain on armor movement, infantry units often could be employed with greater mobility. While the VC acquired and employed anti-armor weapons and mines (often to great effect), their relative lack of sophisticated anti-armor and tank-killing capability made armor units more immune to enemy fires than they would have been against the conventionally equipped enemy that U.S. doctrine assumed.<sup>49</sup>

The ultimate result of these "unusual" conditions was that once an enemy concentration was identified, armor units rather than infantry units conducted the supporting, or fixing, attack. This took advantage of the sustainability of armor vehicles under enemy fire and their ability to move

through jungle and rice paddies more quickly than dismounted infantry. While armor or mechanized units would maintain continuous contact and fire on the enemy, airmobile infantry units would act as the enveloping force, capable of being placed with precision in the enemy's "rear" to cut off escape. This use of armor units in the "fixing" or "supporting" role and airmobile infantry in the "envelopment" role is what marked the reversal in roles from conventional existing U.S. tactical doctrine.<sup>50</sup>

Airmobile infantry units were not always available for the conduct of search and destroy missions, and therefore armor and mechanized forces often conducted such missions alone. Missions of this type normally occurred in three phases: isolation of the area by surrounding it with troops or placing elements in blocking positions across likely avenues of enemy escape; a mounted sweep through the area with tanks leading to disrupt any organized resistance, to detonate mines and booby traps, to locate large installations, and to destroy as many enemy positions and troops as possible; and a final, thorough search by dismounted infantry supported by tanks and M113's to complete the clearing of the area.<sup>51</sup>

Two operations conducted in early 1967 - Operation CEDAR FALLS and Operation JUNCTION CITY - reflected the new armor employment concepts developed in Vietnam. Both operations took place in the III Corps Tactical Zone, and employed

battalion-sized armor and mechanized units to conduct large-scale search and destroy tactics. In CEDAR FALLS, U.S. units sought to destroy a large VC and NVA logistical center in an area twenty-five miles northeast of Saigon called the "Iron Triangle." Despite heavy jungle in the area, armored vehicles could move with little difficulty. Two mechanized battalions, an armor battalion, a cavalry squadron, and several other company-sized armor and mechanized units performed the blocking missions designed to seal the area off. The 11th ACR conducted the "sweep" missions beginning on the 9th of January 1967. For two weeks, units of the 11th ACR discovered numerous enemy base camps and captured significant quantities of enemy intelligence documents. However, the "blocking" portion of the operation failed to meet expectations, since few enemy soldiers were encountered other than scattered battles with platoon-size or smaller units.<sup>52</sup>

The JUNCTION CITY operation which followed took place in an area between the Iron Triangle and the Cambodian border called War Zone C. It too was an operation that employed large-scale armor units of task force size, despite dense vegetation and jungle. Again mechanized and armor units established blocking positions, this time in a horseshoe formation. The 11th ACR again conducted the sweep, going up the horseshoe from the open end. VC and NVA units inside the horseshoe continued to attempt to avoid

sweeping mechanized and armored forces when possible. In this operation, however, the blocking units succeeded in cutting off supply routes into the area. This operation was more successful in fixing enemy forces, since numerous actions occurred between exfiltrating VC and NVA units and U.S. units moved into blocking positions to prevent escape. In some cases, VC and NVA units conducted deliberate attacks on U.S. positions and fire bases along their supply routes in an effort to reopen those routes. Most of the remaining combat actions in JUNCTION CITY were tactical defensive operations along the periphery of the horseshoe.<sup>53</sup> These will be discussed in more depth in the next chapter.

Established doctrine during the CEDAR FALLS and JUNCTION CITY operations stated that "infantry normally dismount to lead an attack through heavily wooded terrain."<sup>54</sup> During these operations and others in jungle areas, however, U.S. units in Vietnam again normally reverted to the reversal of roles between armor and infantry. Due to heavy enemy use of antipersonnel mines and booby traps and frequent ambushes in jungle areas, many units had tanks lead attacks through the jungle. The tanks broke trails, destroyed antipersonnel mines, and disrupted enemy defenses. Mechanized infantry followed and conducted a more thorough sweep of the area. This technique became less effective and more dangerous to tanks as the war went on, however, as the enemy obtained and employed greater quantities of antitank mines.<sup>55</sup>

Operating in rugged and distinctive terrain and conducting heretofore unfamiliar operations, American units at the platoon and company level had to develop new techniques to support search and destroy missions. The 11th ACR, employed often in "search" missions (more commonly known as reconnaissance in force, or RIF missions), developed a technique at the troop level for systematically covering large areas quickly. Squadrons employed troops along separate axes of advance, several hundred meters apart. Each troop sent each of its three platoons on circular sweeps fanning out from the main axis of advance, with this axis serving as the twelve o'clock position on an imaginary clock. One platoon would sweep the area from approximately the ten o'clock to two o'clock position, another from two to six o'clock, and the third from six to ten o'clock (see Figure 3a). Each circular sweep ranged anywhere from a few hundred meters in diameter to beyond a kilometer. Once all of the platoons had returned to the center position, the troop would move up its axis of advance a designated distance and repeat the process.<sup>56</sup>

American reconnaissance in force techniques in Vietnam often meant that platoons assumed responsibility for a separate area of operations when fanning out in the cloverleaf. How platoons formed and moved was critical. The formations U.S. units used depended largely on the type of terrain in the area, the enemy situation, and the type of



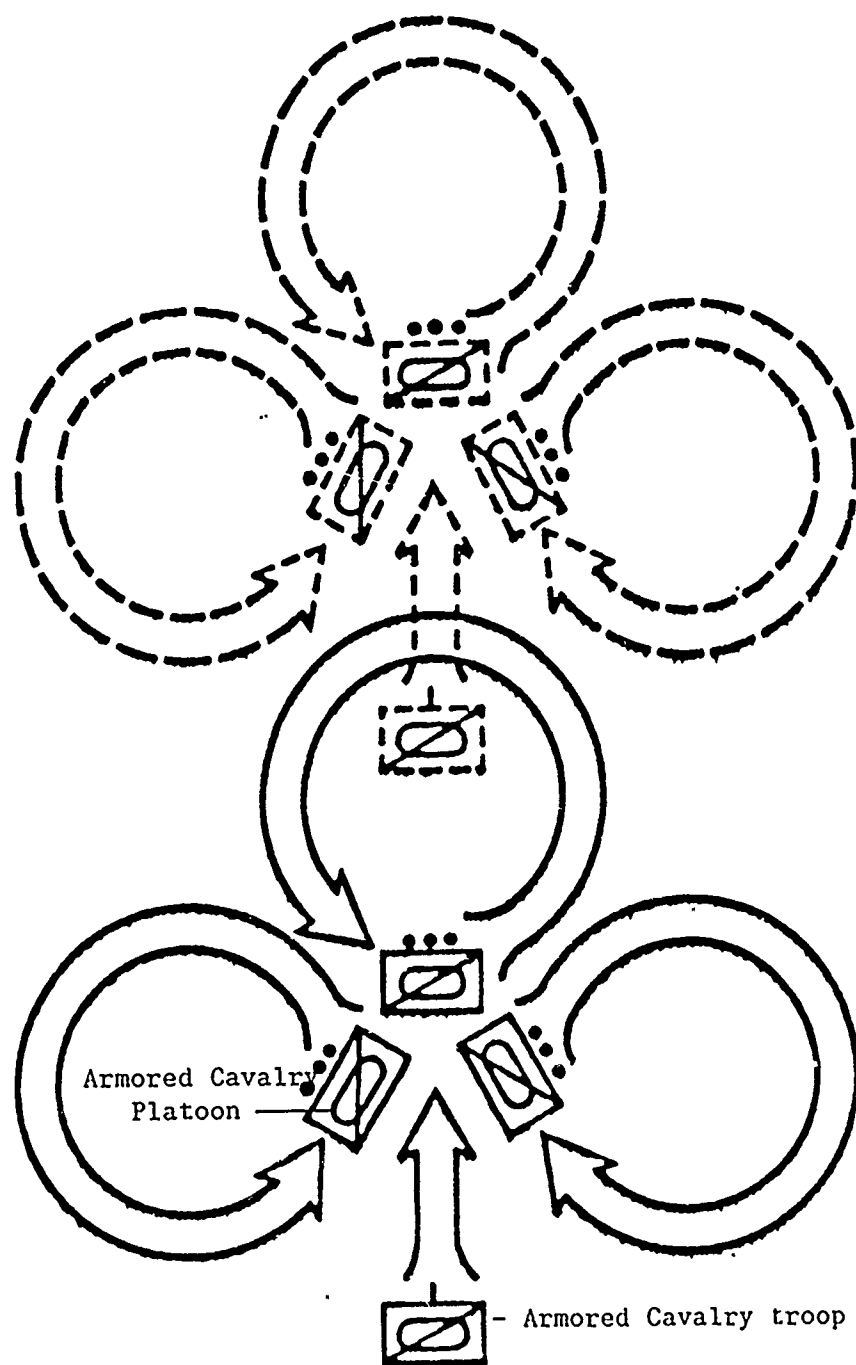


Figure 3a - Cloverleaf technique used in search and destroy missions.

unit doing the reconnaissance. Controlling armored cavalry platoons consisting of a mixture of ACAV's and tanks was often difficult. In jungle terrain, cavalry platoons normally moved either in a platoon column (Figure 3b) or a platoon double column (Figure 3c). In the single column, tanks led in order to break the trail for the lighter ACAV's and APC's, with a tank trailing the column as well for rear security. Distances between vehicles varied from fifteen to fifty meters depending on the thickness of the vegetation. Platoons employed the double column on occasion to achieve a higher level of security, but doing so made it more difficult for the platoon leader to control his vehicles due to very limited observation in heavy vegetation. Cavalry platoons in double column often required guidance from the air to operate under effective control.<sup>57</sup>

Viet Cong and NVA units employed mines and booby traps with increasing frequency as the war progressed. To minimize their effects U.S. armor and cavalry units normally placed tanks in the lead since tank crews were more likely to survive encounter with mines. Units also avoided following in the tracks of other units that had recently moved through the area, due to the ability of the VC to implant mines within hours on paths made by U.S. tracked vehicles. Areas that channelized armor units - fording sites, bridge sites, etc. - were swept for mines before crossing. To counteract booby traps hung from trees or set

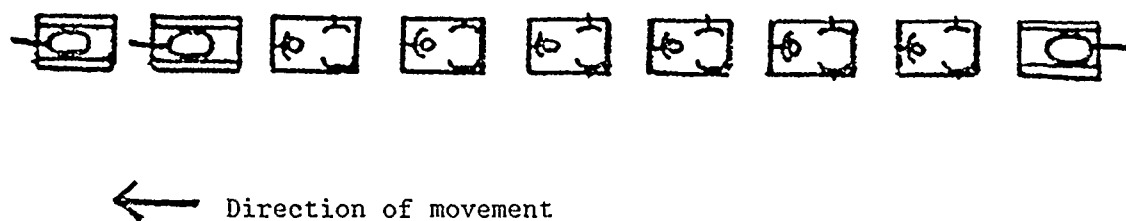


Figure 3b - Armored Cavalry platoon moving in column formation - jungle terrain.

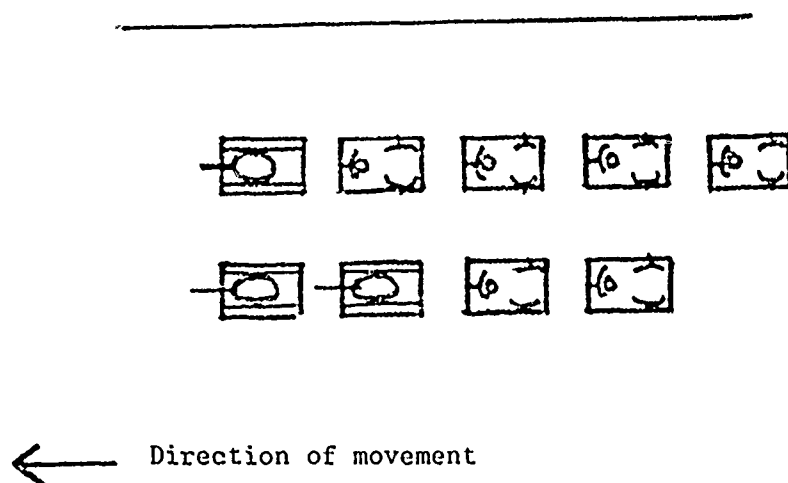


Figure 3c - Armored Cavalry platoon moving in double column formation - jungle terrain.

in underbrush, tanks fired canister ammunition into the brush ahead to cause premature detonation.<sup>58</sup> These methods, however, were at best only partially successful. Mines and RPG hits on U.S. vehicles were common throughout the war, and remained a problem that American armor units never satisfactorily solved.<sup>59</sup>

Other armor innovations at small unit level in Vietnam concerned tank platoon movement techniques in jungle and heavy vegetation. Tank platoons moving through such areas often found that tree trunks hindered their ability to traverse their turrets. This posed a security risk since tanks were vulnerable to fires from the flanks and rear if they could not fire in those directions. Platoons moving through thick vegetation adopted two formations - the inverted wedge and the inverted echelon - to reduce their vulnerability to flanking fires.<sup>60</sup>

The wedge and the echelon formations appeared in U.S. Army doctrinal publications. The wedge formation was in the shape of a "v". A standard wedge formation moved in the direction of the point on the "v", while an inverted wedge formation moved in the direction of the open end. In Vietnam, U.S. units frequently used the inverted wedge while moving through wooded areas, with the two lead tanks orienting their gun tubes toward the front, and the trailing tanks orienting toward the flanks (see Figure 3d). The purpose of the formation was to enable the trailing tanks to



Direction of movement  
Probable direction of enemy

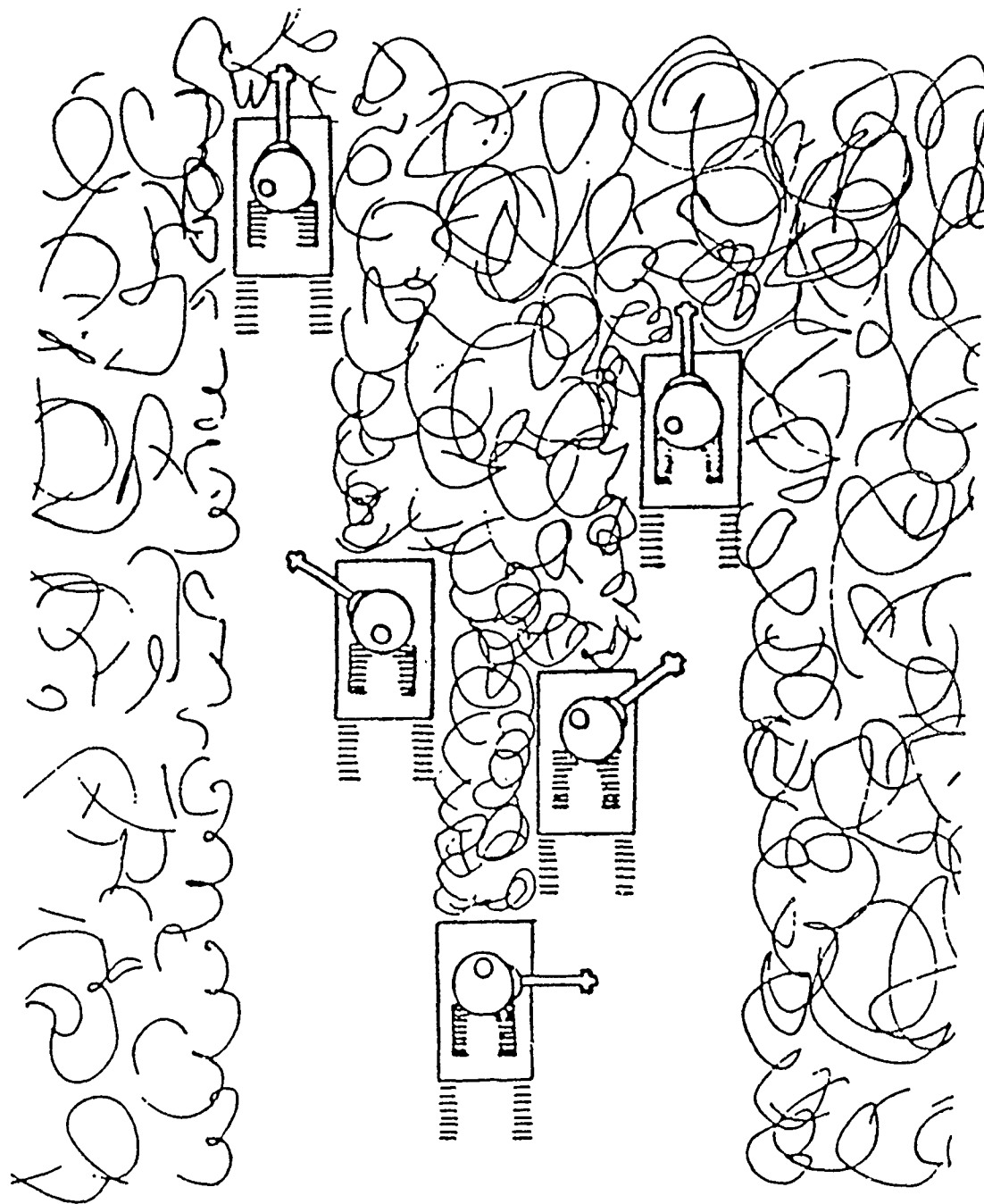


Figure 3d - Tank platoon in heavy vegetation - inverted wedge.

provide flank security to the platoon. The lead tanks, by breaking paths through the wooded area, provided room for the trailing tanks to orient their weapons without having them get caught or obstructed by dense vegetation. Like the double column formation in cavalry platoons, controlling this formation in jungle and dense vegetation was difficult even at platoon level because of very restricted vision, and frequently required guidance from an observer or higher commander in the air to be done effectively. In more open terrain, units often reverted to a standard wedge formation.<sup>61</sup>

The inverted echelon served a similar purpose. An echelon formation was a cross between a line formation (all tanks moving abreast) and a column formation (each tank following in the tracks of another). In a standard echelon formation, for example, the lead tank would also be the rightmost tank, while the trail tank would be the leftmost tank. In most cases, each tank would orient its main gun toward the front, or their direction of movement, since that was where the enemy was most likely to be.<sup>62</sup>

In the area warfare of Vietnam, units conducting "search" or reconnaissance in force missions often had only a vague idea about where the enemy was most likely to be. The most probable location of VC or NVA forces often might be to the flanks. Armor units used the inverted wedge in those situations where the biggest potential threat to the

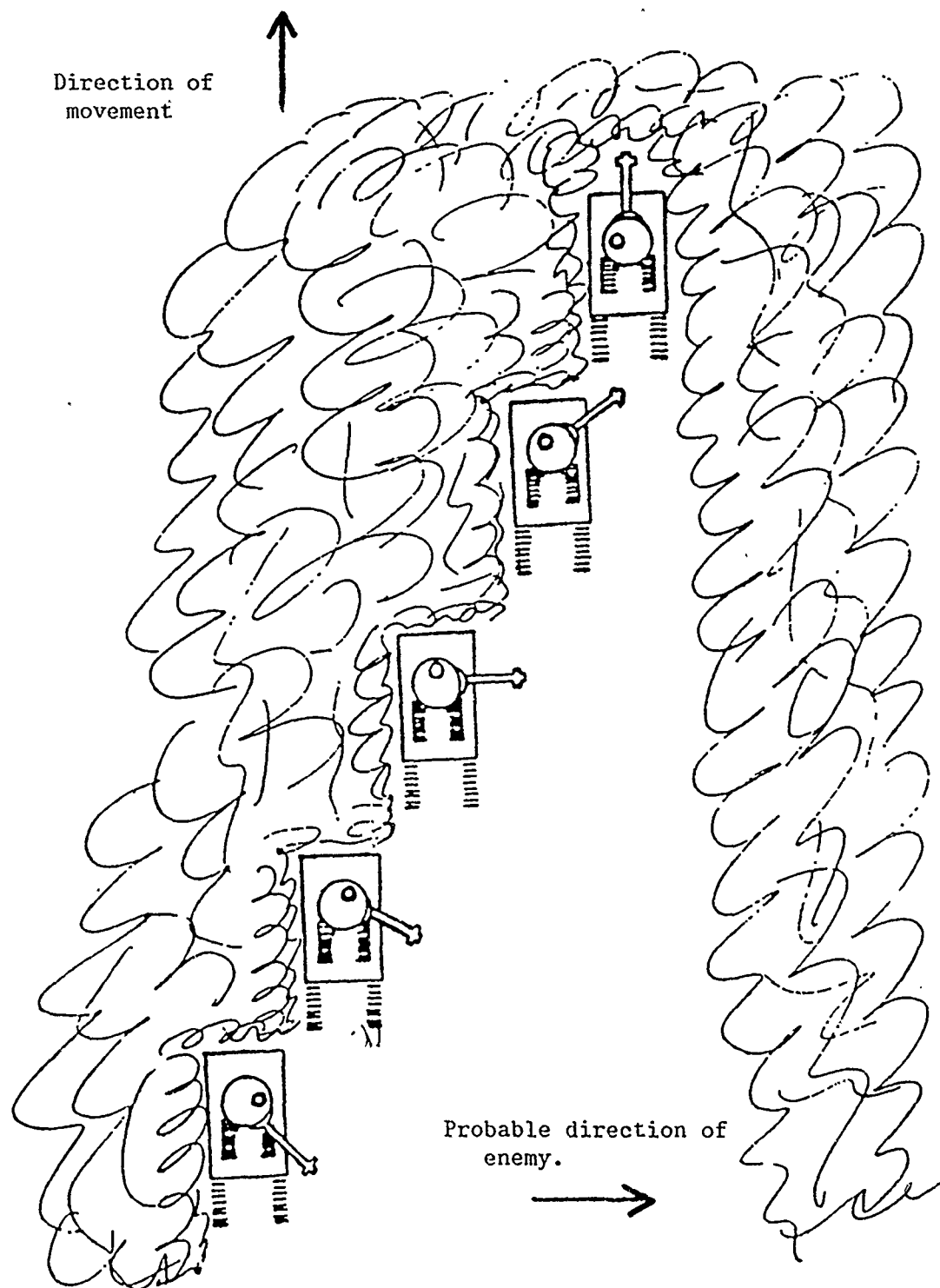


Figure 3e - Tank platoon in heavy vegetation - inverted echelon.

unit came from one flank in particular. In the inverted wedge the lead tank remained oriented in the direction of movement, while the other tanks oriented to the flanks. As each tank cleared its own path through the vegetation, the tank following it and to its flank was free to orient its gun tube to the side with some "breathing space" for its fields of fire (see Figure 3e). The trail tank provided rear security.<sup>63</sup>

Once U.S units located VC or NVA units and made contact, attack techniques against fixed forces did not vary substantially from standard tactical doctrine. Artillery, close air support, and helicopter fire when available suppressed VC positions, followed by an assault led by armored forces in line formation. Dismounted infantry provided protection for the tanks, and swept the area afterwards to completely clear it of opposing soldiers. If bunkers were encountered, American tanks normally employed canister ammunition to uncover the position, then High Explosive Plastic (HEP) or High Explosive delayed-fuse (HE delay) rounds to destroy the bunkers.<sup>64</sup>

### Summary

The American armor experience in both Korea and Vietnam reflected the many adjustments that had to be made to accommodate the conditions in those wars. Each war differed



considerably from a European-style war in several important respects. The terrain dictated adjustments in tactical employment, as did the nature of NKPA, CCF, VC, and NVA tactics. The rugged mountain ridgelines of Korea and the jungle and dense vegetation in areas of Vietnam led to new armor employment methods to adjust to the difficult terrain. Enemy tactics and operational methods required adjustments from U.S. units in the form of bunker destruction operations in Korea and search and destroy and reconnaissance in force missions in Vietnam.

In each of these cases, the techniques employed were not radical departures from existing U.S. doctrine in that basic principles remained in effect. Moving tanks into the hills in Korea was a way of retaining as much mobility, observation, and fields of fire for tanks as possible in order to make the most of armor capabilities. Bunker destruction missions were essentially combined arms assaults using the complementary strengths of dismounted infantry and supporting armor firepower. Armored raids sought to make the most of armor striking power, protection, shock action, and firepower to keep opposing forces off balance.

In Vietnam, search and destroy missions employed armor mobility and brush-breaking capabilities to move U.S. military power quickly into rugged areas in which dismounted infantry could not move as well. Often unable to confront VC and NVA forces directly, U.S. units used techniques like

the cloverleaf to seek contact and bring firepower to bear on an elusive enemy. Platoon-level movement techniques devised in Vietnam sought to maintain mobility, control, and security necessary for effective employment of armor units.

Restrictions on offensive ground operations in each war added to the terrain and tactical limitations, thus fostering a need to adopt new techniques for armor employment. Unable to strike into North Korea over the last two years of the Korean War, nor to strike into North Vietnam in the Vietnam conflict because of the overriding (and necessary) strategic concerns inherent in such actions, armor units offensively were limited. When restrictions were lifted - as occurred in 1970 when U.S. armor units participated in operations in Cambodia - employment techniques approached standard pre-war doctrine. Yet despite numerous limitations, U.S. armor forces continued to contribute significant and effective support to those operations the Army did conduct. As far as local military objectives went, bunker busting missions and armored raids were successful applications of armor capabilities in Korea. Likewise, mechanized and armor search and destroy operations succeeded in clearing local areas and inflicted large casualties on VC and NVA units in those areas. The ultimate wisdom of such operations may be questionable in hindsight, of course, but armor utility at a tactical level offensively was confirmed in both of these limited wars despite

conditions that often precluded employment under existing  
U.S. doctrine.

## Notes for Chapter Three

<sup>1</sup>U.S. Army Armor School (USAARMS), "Employment of Armor in Korea - The First Year, Volume I," Committee Report prepared by Committee 11, Armor Officers Advanced Course, 1951-1952. (Ft. Knox: U.S. Army Armor School, 1952), p. 233.

<sup>2</sup>Lt. Col. George B. Pickett, Jr., "Tanks in Korea: 1950-1951," *Armor* 60 (November-December 1951), p. 12.

<sup>3</sup>USAARMS, "Employment of Armor in Korea," p. 176.

<sup>4</sup>*Ibid.*, p. 187.

<sup>5</sup>Lt. Col. George B. Pickett, "Task Force Crombez at Chip'yong-ni," *Armor* 61 (July-August 1952), pp. 34-35.

<sup>6</sup>Russell A. Gugeler, *Combat Actions in Korea* (Washington: Combat Forces Press, 1954), p. 136.

<sup>7</sup>*Ibid.*, p. 137.

<sup>8</sup>USAARMS, "Employment of Armor in Korea," p. 179.

<sup>9</sup>Gugeler, *Combat Actions*, p. 138.

<sup>10</sup>*Ibid.*, pp. 139-141.

<sup>11</sup>USAARMS, "Employment of Armor in Korea: The Second Year," Report by Committee 35, Armor Officers Advanced Course, 1952-1953 (Ft. Knox, Ky.: U.S. Army Armor School, 1953), p. 226.

<sup>12</sup>Gugeler, *Combat Actions*, p. 150.

<sup>13</sup>Donn A. Starry, *Mounted Combat in Vietnam* (Washington, D.C.: Department of the Army, 1978), p. 73.

<sup>14</sup>Col. William W. Cobb, "Mounted Combat in Vietnam," *Armor* 77 (July-August 1968), p. 10.

<sup>15</sup>*Ibid.*, pp. 10-11.

<sup>16</sup>Ellis A. Johnson, "Armored Warfare in the Eighth Army in Korea," U.S. Army, Operations Research Office, 1951, p. 6. Level L, U.S. Army Military History Institute, Carlisle, Pa.

<sup>17</sup>Gen. Matthew B. Ridgway, *The Korean War* (Garden City, N.Y.: Doubleday, 1967), p. 237.

<sup>18</sup>1st Lt. Robert L. Burns, "Armor in the Hills," *Armor* 60 (September-October 1951), p. 34.

<sup>19</sup>U.S. Army, "Employment of Armor in Korea," Headquarters, 2nd Infantry Division, 14 July 1951.

<sup>20</sup>Burns, "Armor in the Hills," pp. 35-36.

<sup>21</sup>*Ibid.*, pp. 35-36.

<sup>22</sup>Walter G. Hermes, *The United States Army in the Korean War*, volume 2: *Truce Tent and Fighting Front* (Washington, D.C.: Department of the Army, 1966), pp. 80-87.

<sup>23</sup>Carroll McFalls, Jr. "Bunker Destruction by Tank Cannon," *Armor* 61, March-April 1952), pp. 10-14.

<sup>24</sup>*Ibid.*, pp. 10-14.

<sup>25</sup>*Ibid.*, p. 11.

<sup>26</sup>*Ibid.*, p. 11.

<sup>27</sup>Charles W. Walson, "Tanks in Positional Warfare," *Armor* 61 (November-December 1952), pp. 12-15.

<sup>28</sup>McFalls, "Bunker Destruction," p. 12.

<sup>29</sup>*Ibid.*, p. 13.

<sup>30</sup>*Ibid.*, pp. 13-14.

<sup>31</sup>*Ibid.*, p. 14.

<sup>32</sup>Pickett, "Tanks in Korea," p. 13.

<sup>33</sup>Raymond E. Webb, *72nd Tank Battalion in Korea, 1950-1952* (Tokyo: Tappan, 1952) pp. 30-33.

<sup>34</sup>Hermes, *Truce Tent and Fighting Front*, pp. 290-378.

<sup>35</sup>USAARMS, "Employment of Armor in Korea: The First Year, Vol. II," Report by Committee 11, Armor Officers Advanced Course, 1951-1952 (Ft. Knox, Ky: U.S. Army Armor School, 1952), pp. 238-239.

<sup>36</sup>USAARMS, "Employment of Armor in Korea: The Second Year," pp. 83-86.

<sup>37</sup>Johnson, "Armored Warfare in the Eighth Army," pp. 9-11.

<sup>38</sup>Sam Freedman, "Tankers at HEARTBREAK," *Armor* 61 (September-October 1952), pp. 24-27.

<sup>39</sup>USAARMS, "Employment of Armor in Korea: The Second Year," pp. 83-84.

<sup>40</sup>*Ibid.*, pp. 84-85.

<sup>41</sup>Hermes, *Truce Tent and Fighting Front*, pp. 385-389.

<sup>42</sup>United States Army, Vietnam, *Mechanized and Armor Combat Operations in Vietnam* (San Francisco: Department of the Army, 1967), pp. 51-57. Hereafter, this study will be referred to by its acronym, MACOV.

<sup>43</sup>Lt. Col. Robert H. Nevins, Jr. "Air Cavalry Find and Fix Operations," *Armor* 77 (July-August 1968) pp. 14-16.

<sup>44</sup>U.S. Army, Vietnam, *MACOV*, p. 57.

<sup>45</sup>*Ibid.*, p. 57.

<sup>46</sup>*Ibid.*, p. 54.

<sup>47</sup>FM 100-5, *Field Service Regulations, Operations* Department of the Army, 28 March 1967, pp. 63-66.

<sup>48</sup>U.S. Army, Vietnam, *MACOV*, p. 66.

<sup>49</sup>*Ibid.*, pp. 82-84.

<sup>50</sup>*Ibid.*, pp. 82-84.

<sup>51</sup>Starry, *Mounted Combat*, pp. 91-95.

<sup>52</sup>*Ibid.*, pp. 95-100.

<sup>53</sup>*Ibid.*, pp. 96-98.

<sup>54</sup>U.S. Army, Vietnam, *MACOV*, p. 83.

<sup>55</sup>Maj. Gen. Arthur L. West and Col. Donn A. Starry, "Armor in an Area War," *Armor* 77 (September-October 1968), pp. 34-36.

<sup>56</sup>Lt. Col. Raymond R. Battreall, Jr., "Cavalry Operations," *Armor* 77 (September-October 1968), pp. 48-50.

<sup>s7</sup>UAARMS, "Armor in Vietnam," Special Text 17-1-3, U.S. Army Armor School, Ft. Knox, Ky., October 1970, pp. 4-1 to 4-2.

<sup>s8</sup>*Ibid.*, p. 4-5.

<sup>s9</sup>Starry, *Mounted Combat*, p. 223.

<sup>s0</sup>U.S. Army, Vietnam, MACOV, pp. 93-95.

<sup>s1</sup>USAARMS, "Armor in Vietnam," pp. 4-2 to 4-3.

<sup>s2</sup>*Ibid.*, p. 4-2.

<sup>s3</sup>*Ibid.*, p. 4-2.

<sup>s4</sup>*Ibid.*, pp. 4-5 to 4-6.

## CHAPTER IV

### ARMOR EMPLOYMENT IN DEFENSIVE ROLES - KOREA AND VIETNAM

American Army armor employment in defense roles in Korea and Vietnam was not as extensive as offensive employment, but significant nonetheless. Only two periods of the Korean War after the Chinese intervention involved sustained defensive operations. The first occurred during the initial Chinese offensive from December, 1950 through January, 1951. The second occurred during the CCF's Spring Offensive from April to June, 1951.' Naturally local defensive actions occurred throughout the war. Defensive tactical employment techniques did not face the same restrictions that offensive operations did. Offensive operations were deliberately limited once the U.S. objective in Korea reverted to preserving South Korean autonomy rather than reunification of the peninsula. Defensive operations, on the other hand, sought only to retain terrain already under U.S. and U.N. control and thus faced fewer constraints. The nature of CCF tactics and the Korean terrain continued to play a significant role in the manner that the U.S. Army employed its armor units in the defense.

One of the methods it used - defense in depth - incorporated some standard army doctrinal techniques in counteracting large-scale CCF attacks. Defense in depth



benefitted from and took advantage of Chinese weaknesses - a lack of mobility, logistical sustainment shortfalls, and lack of armor - that a European-style opponent was far less likely to have. The inability of the infantry-heavy CCF to employ mobile armor firepower to exploit local breakthroughs, and its inability to sustain initial successes logistically led to the use of U.S. armor as a key element in defending in depth. Essentially defense in depth was simply "rolling with the punches" and then counterattacking against overextended Chinese units to restore the original line. It often involved fighting, at least temporarily, while completely surrounded by CCF forces.<sup>2</sup>

The other notable use of armor in a defensive mode in Korea was the use of armor in the very untraditional role of indirect fire support. This particular use of armor was based again on considerations of the nature of the CCF in the attack. Using masses of infantry in the attack, CCF units were vulnerable to indirect fire, and U.S. employment of tanks as a supplementary source of indirect fire was a means of taking advantage of this CCF characteristic.

In Vietnam most defensive employment techniques could be classified as nontraditional. In a war with no real front lines, U.S. units constantly were subject to attacks and ambushes. U.S. units responded by developing quick reaction techniques and formations such as the "laager" and the

"herringbone" to counteract this threat. In this war without front lines, units fighting defensive battles could expect to fight with equal intensity on all sides, rather than primarily to one direction. Unlike local actions during Korean defense in depth missions, however, defensive battles in Vietnam were less temporary in nature because they often were fought to protect permanent or semi-permanent camps and installations. Perimeter defense tactics thus was a big part of armor employment in Vietnam. As was the case with offensive operations, American armor units adopted many non-traditional techniques in both wars to take maximum advantage of armor capabilities in conflicts that presented unique terrain and enemy tactics.

#### Armor Employment Techniques in the Defense - Korea

U.S. Army doctrine at the beginning of the Korean War briefly addressed the concept of tank indirect fire. Field Manual (FM) 17-33 stated that:

"Under exceptional conditions tanks may employ indirect fire to support the attack; however, because of the flat trajectory, high muzzle velocity and small bursting radius of tank projectiles, and the excessive wear on the [gun] tube, this is an abnormal mission. When such a mission is assigned to tanks, special

provisions must be made for maintaining the basic ammunition load."<sup>3</sup>

The U.S. Army's gunnery manual, FM 17-12, barely addressed tank indirect fire techniques, other than briefly addressing techniques for engaging targets temporarily in defilade positions.<sup>4</sup>

Some instances of American units employing tanks in indirect fire missions were recorded early in the war. In September of 1950 the Armored Officer in I Corps Headquarters noted with disapproval that some units had been observed to "employ all tanks in a supporting artillery role." He attributed this to the fact that "commanders were not prepared to make full use of the tanks at their command, either for the breakthrough or for exploitation" as Eighth Army attempted to break out of the Pusan Perimeter in the week after the Inchon operation. His objections stemmed not from the mere fact that tanks had been used as artillery in some cases; the problem was that tanks had been employed in a secondary mission when a great need and opportunity existed for their use in their primary role.<sup>5</sup> Near Pusan in September, 1950, employment of tanks as artillery was doctrinally and tactically unsound.

The situation in the spring of 1951 was somewhat different. The enemy the Americans faced here essentially had no tanks. There was thus no need or opportunity for using American tanks in an anti-armor mode. Enemy offensive

tactics, particularly those of the Chinese Communist Forces, involved massive infantry assaults. Facing mostly dismounted infantry, the most effective instrument of American combat power was the accuracy and quantity of artillery fires. Commanders facing the Chinese and responsible for defending against these large-scale infantry attacks believed that their available light and medium artillery was in shorter supply than desired. At the same time, while tanks could operate in limited numbers and on a small scale in the mountainous regions of Korea, it was difficult to mass and employ tanks in their desired roles. The combination of all these factors made the idea of using tanks as artillery worth considering.<sup>6</sup> The U.S. X Corps, occupying a portion of the line in the rugged central mountains of Korea, was particularly interested in this concept.

On 5 March 1951, X Corps published and distributed a letter entitled "Utilization of Tanks in Indirect Fire Role." It indicated that "in order to bring the maximum number of guns to bear on the enemy, tanks habitually will be used in indirect fire roles when not engaged on their primary mission."<sup>7</sup> It went on to suggest that two tank platoons be used as a single firing unit of ten guns. One officer and four enlisted personnel from each regimental tank company were directed to report to the regiment's direct support artillery battalion for training in fire

direction center (FDC) computing techniques. The direct support (DS) artillery battalion was directed to designate an indirect fire unit commander for each two-platoon firing unit. This officer would "command the tank fire during firing of the indirect fire until such time as the organic tank officer becomes proficient in these duties." Artillery FDC's would control tank unit indirect fire, with the artillery units also responsible for furnishing the necessary wire communications to the tanks. The letter directed divisional tank battalions to undergo similar training through divisional organic medium artillery battalions.<sup>2</sup>

On 17 March 1951, the 7th Infantry Division (assigned to X Corps) issued a subsequent training memorandum which supplemented and modified the 5 March Corps directive. It established the basic firing unit within the division as a single tank platoon. It directed that indirect fire from tanks be incorporated into the artillery harassment and interdiction (H & I) plan, and that tank fire would normally be employed only on deep, pre-arranged targets. The Division commander might occasionally assign the division tank battalion missions to reinforce any of the division's artillery battalions. Tanks performing an indirect fire mission would be under the operational control (OPCON) of the reinforced artillery battalion. The tank battalion would rotate tank platoons into the indirect fire

reinforcing missions so that all would receive an appropriate level of training and experience in firing as artillery.<sup>9</sup>

One of the most extensive uses of tanks in the indirect fire mode within X Corps occurred in support of a defense in the battle of the Soyang on 17 May 1951. During the North Korean and Chinese "Fifth Phase Offensive" of the spring of 1951, the enemy directed their main effort at the U.S. 2nd Infantry Division and two Republic of Korea (ROK) divisions within the X Corps zone. Here X Corps used 32 tank platoons, or approximately 160 tanks, in supplementing and reinforcing the artillery battalions in indirect fire. Both divisional and regimental tank units were integrated into the indirect fire plan. The result was a blanket of interlocking indirect fire areas which allowed the X Corps commander to place extremely high volumes of indirect fire at critical spots throughout the Corps front, and to control those fires through fire direction centers.<sup>10</sup>

Lieutenant General Edward M. Almond, the X Corps commander, became a mild proponent of the use of armor in indirect fire. One of the key advantages he saw in using tanks as artillery was that tanks could be employed well forward due to their heavy armor protection. Consequently, the use of tanks "greatly extended, in effect, our artillery ranges to 19,500 yards . . . [which] permitted us to interdict and harass roads and trails being used by the

enemy far beyond medium and light artillery ranges."<sup>11</sup> Tank firing range capabilities were enhanced by positioning them on ramps or embankments at a slope of about 30 degrees. This, according to Almond, gave them additional range and made it easier for the rounds to clear the rugged terrain which might otherwise obstruct their fires.<sup>12</sup>

Other occasions in which tanks fired indirect support occurred throughout the war. In August 1951, a platoon of tanks in the 70th Heavy Tank Battalion (25th Infantry Division) was attached to a field artillery battalion. Its mission was to reinforce the artillery battalion's support of a cavalry regiment near Chorwon, Korea. In addition to firing at supply point and assembly area targets, the platoon also received a counter-battery mission. At an estimated range of 9,000 yards, the platoon was credited with silencing the enemy artillery pieces.<sup>13</sup>

In December, 1952 a platoon in the 73rd Medium Tank Battalion underwent a week-long indirect fire training program. The platoon then fired in the indirect mode at enemy targets in the 10,000 to 14,000 yard range. The battalion aerial observer adjusted the fires. The results were successful enough that the battalion commander directed that the rest of his platoons go through a similar program which the battalion established on its own. According to the commander, a pleasant side effect of the indirect fire

training was that crew members improved their direct fire gunnery skills as well.<sup>14</sup>

Using armor as artillery had significant drawbacks, however. The bursting radius of a 90mm tank shell was approximately 40 x 12 yards (480 square yards), far less than the 50 x 15 yard radius (750 square yards) of a 105mm artillery shell.<sup>15</sup> The smaller ground effects of armor rounds meant that far more had to be fired to achieve the same effects. Armor units in indirect fire support missions consumed significantly higher amounts of ammunition, often up to 100 rounds per day, a rate which organic armor battalion supply vehicles could not support on a sustained basis. One hundred rounds of 90mm ammunition weighed about six and a half tons; a company of seventeen tanks consuming one hundred rounds per tank per day required 110 tons of ammunition per day. Such a resupply effort required the equivalent of seventeen 2½-ton trucks completing two round trips per day per truck to sustain.<sup>16</sup> The combined assets of a battalion could support this, but only at the expense of the other companies in the battalion. A battalion in an indirect fire support mission required either a preliminary build-up period of several days to stockpile enough ammunition to perform the mission, or specially detailed outside support. On the positive side, vehicles used for fuel resupply could be diverted to ammunition supply in such



instances, since tanks in indirect fire roles normally remained stationary.<sup>17</sup>

Another serious problem in using tanks in indirect fire support roles was increased wear on the gun tubes. Tubes in a unit providing continued indirect fire required replacing after as little as two weeks; replacing gun tubes at such a frequent rate was an expensive and time-consuming process. Even new gun tubes could not maintain a high sustained rate of fire, making tank units normally suitable only for harassment and interdiction fires and not for the other artillery requirements such as final protective fires.<sup>18</sup>

The limited elevation range of tank gun tubes further limited tank indirect fire effectiveness. Unable to fire at the same high angle of fire as artillery pieces, tank indirect fire at ranges less than 10,000 meters was too "flat" to be effective in the mountainous terrain of Korea. Targets all too often were masked by the hills. Thus, tank indirect fire was most useful at targets beyond 10,000 meters.<sup>19</sup> Accuracy at those ranges was not a problem when firing data for tank sights was directed by a Fire Direction Center. This characteristic - greater effectiveness at long ranges than for shorter ranges - reinforced the rationale to use tanks for the indirect fire role in order to extend the range of American artillery fire beyond that of conventional artillery.

The employment of tanks in an indirect fire capacity did not play a decisive role in the Korean War. Furthermore, while many officers shared General Almond's enthusiasm for the concept, many others did not. Many continued to hold that tanks should not be employed as artillery unless the commander believed that they absolutely could not be used in more useful direct fire roles. Tank indirect fire missions nevertheless were often successful, and occasionally contributed to the effectiveness of American combat operations. Despite the obvious drawbacks and limitations, the use of armor as artillery in Korea in most cases was not a flagrant violation of sound doctrine. Rather, it was primarily an attempt to use a valuable and available asset to the maximum extent possible under circumstances in which conventional employment of tanks was less useful.

Tanks did serve in several roles other than indirect fire in the defense. During the Chinese offensives early in 1951, American tank units played a key role in General Matthew Ridgway's defense in depth tactics that absorbed the momentum of the assaults and allowed for a generally orderly withdrawal south as plans for offensive operations proceeded.. General Ridgway, anticipating new Chinese offensives after he assumed command of the Eighth Army in late December, 1950, noted the U.S. Army's armor superiority over the CCF.<sup>20</sup> At the same time, Chinese forces

outnumbered the Eighth Army along the front, and large gaps existed in the U.S. lines. Lacking the manpower to prevent Chinese penetrations of these gaps during the CCF's habitual night attacks, and conceding Chinese superiority in night fighting capability, U.S. forces adopted a "defense in depth" technique.

At night, U.S. front-line infantry units "buttoned up tight" around easily defensible terrain features and inflicted what losses they could on Chinese forces advancing through the gaps in the line.<sup>21</sup> Behind them, from several hundred to several thousand kilometers, were tank-infantry teams whose role was to counterattack strongly against the penetrations during daylight. The CCF depended almost entirely on movement by foot, and its relatively primitive logistical support system had difficulty in supporting sustained offensive operations. Once daylight came, the Chinese forces often were stretched out and vulnerable to these armor-infantry counterattacks, as well as to American tactical air fire. Disposition of forces in depth and quick reactions by armor counterattack forces minimized the effects of enemy penetrations.<sup>22</sup> This helped preserve the integrity of the outmanned U.S. lines as they stabilized during the early parts of 1951.

During the Chinese Spring Offensive from April to June, 1951, American armor units were employed in a similar manner as part of Ridgway's "rolling with the punch" concept.

Again armored units were employed in depth, both as potential counterattack forces and as overwatching forces for the withdrawal of the forward units under heavy pressure from the CCF. Often units filled both roles during the course of a battle. During a Chinese attack near Kapyong, Korea from April 23-25, 1951, one tank company of the 72nd Tank Battalion overwatched the withdrawal of elements of the 6th ROK Division, conducted an operation to retrieve some fifty abandoned U.N. vehicles, relieved a surrounded Australian battlion and covered its withdrawal, and counterattacked around to the rear of a Chinese force conducting a heavy assault against a Canadian battalion. During the two-day effort, the unit inflicted an estimated 800 casualties on CCF forces. Two U.S. tanks were hit by 3.5" rockets, but remained functional.<sup>23</sup> This ability to shuttle armored forces throughout threatened areas allowed U.S. and U.N. forces frequently to check CCF penetrations or slow them down sufficiently to organize a strong counterattack.

Many situations occurred in which armor was not so well tailored for defensive operations. The success of the tanks units at Kapyong was possible largely because the terrain in that area was much more open and suitable for tank employment.<sup>24</sup> In severely mountainous terrain, armor mobility remained limited, and its usefulness as a counterattack force diminished. Tanks were still used to

provide close fire support for infantry units against CCF infantry, but the defense in depth techniques were far less applicable.<sup>25</sup>

Chinese tactics, characteristics, and weaknesses, along with the nature of the terrain, were the primary factors that influenced American armor employment techniques in the defense. Restrictive terrain and Chinese vulnerability to indirect fire led to the use of tanks in the indirect fire role during the early months of 1951. Chinese lack of mobility and lack of tank-killing armor of their own made defense in depth and armor-spearheaded counterattacks a productive means of taking the steam out of Chinese offensives during the same period.

Both concepts were addressed in U.S. doctrine, but were not considered appropriate for use in a motorized, European environment. Defense in depth allowed units to be temporarily cut off, since armor striking power and American air superiority could ensure timely relief in nearly every case. This would not necessarily be the case in Europe. In a European war, American tanks would find a primary role to be killing enemy armor, and therefore would not expect to waste valuable rounds on indirect fire. In Korea, however, the enemy did not have armor, and such tactical employment techniques were effective when executed well. Armor units that deployed to Vietnam fifteen years later likewise developed employment techniques that were not necessarily

suitable for an unlimited conventional war in Europe, but were effective in contributing to American combat operations in Vietnam.

#### Armor Employment Techniques in the Defense - Vietnam

Despite an emphasis on offensive operations in Vietnam, some of the most effective use of armor and mechanized forces occurred in defensive missions. The lack of definite and continuous lines in the war meant that units everywhere, at any time, were subject to attack. Armor units in defensive positions in Vietnam were less concerned with retaining or protecting terrain as they were concerned about protecting and preserving American units, materiel, and combat power. American tank, cavalry, and mechanized units habitually assumed defensive posture when they were not actively engaged in offensive operations in area warfare. Several new defensive techniques emerged for armor units during the Vietnam war, mainly during the early years of the war when it was more of a counterinsurgency effort than a conventional war. The most common were the laager defensive position and the herringbone formation designed to defend against ambushes.

The laager was simply a 360-degree defensive position occupied by combat units in Vietnam. Units assumed laager positions when halted for extended periods of time,

particularly at night when VC and NVA attacks were most likely. Armor or cavalry units could occupy laager positions as separate units, or in conjunction with infantry and artillery units.<sup>26</sup>

The primary consideration in the selection of a laager site was finding relatively open terrain. Having good observation and fields of fire made it difficult for VC and NVA infiltrators to sneak up on the perimeter. Open terrain also enhanced the use of radar, image intensification devices, and mortar illumination, all useful for maintaining security at night. At the same time, it allowed for the necessary maneuver room inside the perimeter to move vehicles quickly in support of threatened areas of the position. If terrain was not naturally open, armored vehicles created fields of fire by knocking over brush, jungle, and wooded areas. During the dry season units often burned off areas around the perimeter to achieve the same effect. An acceptable "standoff distance" to thickly vegetated areas was fifty meters, with at least 200 meters the norm. Since VC and NVA units habitually boobytrapped and mined areas that U.S. units had already been through, units normally avoided occupying previously used positions.<sup>27</sup>

Vehicle positioning within laagers was much tighter (fifty meters apart or less) than standard doctrine called for, for several reasons. The primary reason was that VC

and NVA units were skilled in night operations and infiltration; tight vehicle intervals were necessary for security against infiltration and for mutual support among the perimeter vehicles in the event of a massed attack against one portion of the perimeter. American units were able to bunch their vehicles together like this in violation of standard doctrinal guidance because VC and NVA units lacked the tactical air and massed artillery capability to which "bunched up" units normally would be vulnerable.<sup>28</sup> Control within the perimeter was easier as well when vehicles were concentrated. When armor units occupied positions in conjunction with dismounted infantry, their dispersion normally increased due to the availability of infantry to occupy the gaps between vehicles. In any laager, support units such as mortar sections, supply vehicles, and so forth were located in the center and massed for protection (see figure 4a).<sup>29</sup>

To further enhance security, units placed concertina wire, claymore mines, and trip flares outside the perimeter. At night units established listening posts along likely avenues of approach into the position to provide early warning, and often sent out ambush patrols 700 to 1000 meters out to further deny VC and NVA forces access into the area.<sup>30</sup> Armor units also found that moving laager positions frequently reduced assaults on their positions by reducing





the opportunity for the VC to plan and execute concentrated attacks.<sup>31</sup>

The laager generally was an effective method of defense for American armor and cavalry units in Vietnam. VC forces suffered some of their most significant losses during assaults on well-prepared and dug in armor laager positions. During one large-scale Viet Cong attack at night against the individual troop-sized laager positions, Team K of the 3d Squadron, 11th ACR successfully used the techniques described above to ward off an attack on a position it had occupied only hours before.

One of the unit's three ambush patrols provided early warning of the attack and remained in position throughout the battle, disrupting the VC attack from the time it got underway. A mortar battery within the perimeter of a nearby team began firing almost continuous illumination, allowing the ACAVs along the Team K perimeter to identify VC soldiers and place accurate machine gun fire on them. Striking first against the northern sector of the perimeter, the VC later shifted their main effort against the eastern and then southern sectors. During each of these shifts, the unit shifted some of its own ACAVs within the perimeter to meet the major VC effort. The VC, equipped with antitank rocket launchers and recoilless rifles, succeeded in damaging several ACAVs, but none were destroyed. Along with the machine guns of the ACAVs and the tank guns of the three

tanks along the perimeter, Team K received indirect fire support from the squadron howitzer battery and helicopter gunship support from the 11th ACR's air cavalry troop. The great firepower available to the unit from its own vehicles and from the available support outside the unit allowed Team K to repel a reinforced battalion sized attack within a period of about an hour and a half.<sup>32</sup>

The laager was the primary means of defense for a stationary unit. In Vietnam, however, units often were on the move and were subject to ambush at virtually any time. To counter VC ambushes, U.S. armor and cavalry units employed the herringbone formation.

The herringbone was a defensive formation which was often used by units in security missions or offensive operations. Units moving along roads or trails in column would form a herringbone whenever they halted or made enemy contact by having the lead vehicle pull to one side of the route of march. That vehicle would then face outward and halt. The vehicle behind it would pull to the opposite side of the road, face outward in the opposite direction, and it would halt. This alternating pattern repeated itself throughout the column formation, with the interval between vehicles varying from ten to fifty meters (see figure 4b).<sup>33</sup>

As with the laager formation, most units tried to concentrate their vehicles for greater security and to mass firepower, since they were unlikely to come under massed

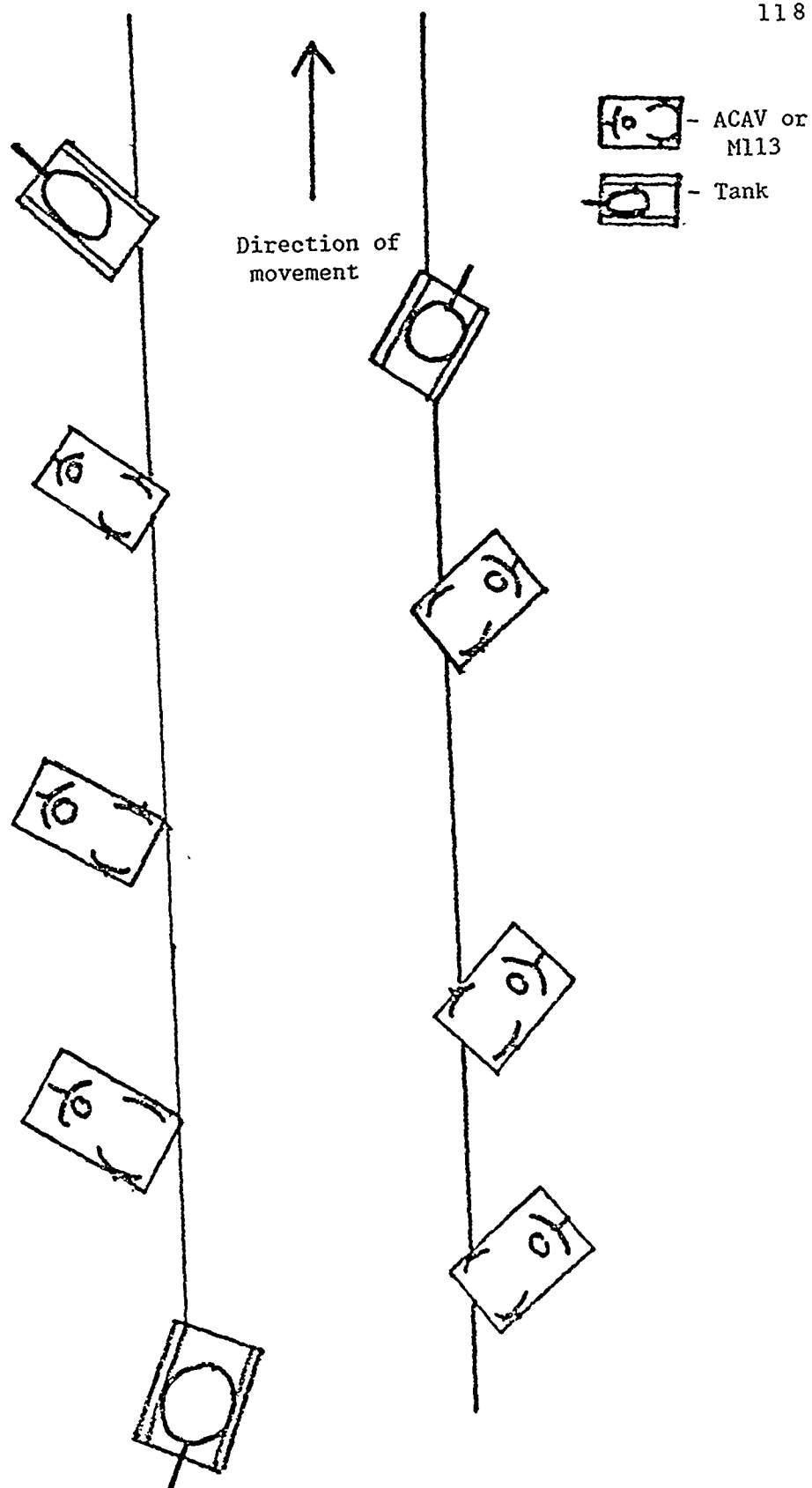


Figure 4b - Armored Cavalry platoon herringbone formation.

artillery or tactical air fire. The universally preferred ammunition was canister, or the "beehive" round. Filled with small shot, one round of this deadly ammunition was capable of killing or disabling dozens of dismounted soldiers. Vehicle commanders sought to stay within visual contact of adjacent vehicles so that each vehicle received flank protection from other tanks or ACAVs.<sup>34</sup>

In areas where ambushes were extremely likely, company/troop sized units often employed a mobile herringbone. This technique incorporated movement by alternate bounds with the herringbone formation. The first platoon of a unit halted in a herringbone. The second platoon passed through the first and also halted in the herringbone, with the process repeating itself until the unit reached its destination or came into contact with an ambushing force. Due to the high possibility of encountering mines along the road, this process could be done slowly to permit minesweeping teams to clear the route in front of the column, or quickly if the unit wanted to risk losing vehicles to mines in order to move more rapidly.<sup>35</sup>

A unit ambushed while moving in column would normally attempt to move directly to close with the ambushing force rather than fighting from a herringbone. However, the Viet Cong launched most ambushes in areas in which the jungle or vegetation on both sides of the road was too dense to deploy

in this manner or to roll the flank of the ambush by an armored sweep. In these circumstances, units deployed in a tight herringbone formation and sought to return fire at the highest rate of fire possible.<sup>36</sup>

Opinion differed on how best to deploy forces caught in an ambush. The MACOV study recommended that unit elements that had successfully passed through the ambush and elements following the ambush should maneuver to destroy the ambushing force. It specified that only those vehicles halted and engaged ought to assume the herringbone and return fire.<sup>37</sup> Some units had different ideas. Because American armor units could almost invariably count on superior firepower and protection from small arms fire, commanders might move unengaged platoons into the ambush zone to fix and hold the ambushing force. Higher level commanders could then maneuver other forces specifically held in reserve for such purposes to maneuver against the ambushing force.<sup>38</sup>

These reserve units, called reaction forces, sought to catch the ambushing force in the rear, or to deploy dismounted troops on the flank of the ambush to roll up the flank. Ambushed units employing the herringbone thus could become the base of fire and fixing force to allow a reaction force to maneuver against and destroy ambushing Viet Cong units.<sup>39</sup>

### Summary

In both Korea and Vietnam, American armor units emphasized offensive operations. In both wars, nevertheless, defensive employment was frequently necessary. Unlike offensive operations, the major factors affecting defensive employment techniques were the nature of the enemy forces, and the nature of the terrain. The constraints on U.S. ground operations that precluded full utilization of armor offensive capabilities did not significantly affect defensive operations.

The techniques that U.S. armor units developed and employed took advantage of American strengths and demonstrated traditional American weaknesses. In both wars the initiative at night generally belonged to the opponent, be it the CCF in Korea or the VC and NVA in Vietnam. In the defense in depth of Korea, units defensively "buttoned up" at night and waited for daylight to counterattack. In Vietnam the pattern was similar, with units frequently halting offensive operations to occupy self-contained laager positions at night, then continuing offensive operations once daylight came. The techniques were different from previous standard practice, but remained true to traditional American characteristics in combat.

In both wars, American defensive tactics were significantly affected and enhanced by the enemy's relative

lack of tank-killing weapons above the level of mines and light shoulder-fired antitank rockets. Thus, U.S. armor counterattacks in the defense in Korea were often devastating to overextended Chinese infantry units, and many units caught in ambushes in Vietnam actually sought to push more vehicles into the ambush zone in order to generate greater firepower and to fix the ambushing unit in place. These tactics were possible because of the nature of the enemy, an enemy that differed significantly from the motorized, armored units of Europe. Likewise, the use of tanks as artillery in Korea made sense in some cases only because of the vulnerability of attacking Chinese infantry to high volumes of indirect fire, coupled by terrain restrictions that made it difficult for tanks to employ direct fire in certain mountainous areas.

Armor units played an important and often effective role in defensive operations in both wars. They generally provided enhanced mobility and firepower except in the most rugged terrain, and were successful in inflicting large casualties on enemy forces while sustaining fewer themselves. Of course, it is one thing to say that armor units and their tactics were successful in what they aimed to do. Whether the tactics that U.S. units adopted in these wars adequately supported overall American war aims is another thing altogether.



## Notes for Chapter Four

<sup>1</sup>U.S. Army Armor School (USAARMS), "Employment of Armor in Korea: The First Year, Volume I," Report by Committee 11, Armor Officers Advanced Course, 1951-1952 (Ft. Knox, Ky.: U.S. Army Armor School, 1952), p. 236.

<sup>2</sup>*Ibid.*, p. 237.

<sup>3</sup>FM 17-33, *Tank Battalion*, Department of the Army, Washington, D.C., March 1949, p. 149.

<sup>4</sup>FM 17-12, *Tank Gunery*, Department of the Army, Washington, D.C., October 1949, p. 106.

<sup>5</sup>U.S. Army Armor School, "Comments on Action in Korea," Ft. Knox, Ky., December 15, 1950, p. 1. Located in Documents Section, Level E, U.S. Army Military History Institute (USAMHI), Carlisle Barracks, Pennsylvania. Henceforth referred to in abbreviated form as USAMHI.

<sup>6</sup>U.S. Army Armor School, "A Secondary Role for Armor: Tanks as Artillery," Report by Committee 10, Armor Officers Advanced Course, 1952-1953. (Ft. Knox, Ky.: U.S. Army Armor School, 1953), p. 13.

<sup>7</sup>Headquarters, X Corps, "Utilization of Tanks in Indirect Fire role," latter AG 470.8, 5 March, 1951, p. 1. Documents Section, USAMHI.

<sup>8</sup>*Ibid.*, pp 1-2.

<sup>9</sup>Headquarters, 7th Infantry Division, "Utilization of Tanks in Indirect Fire Role," Training Memorandum Number 4, 17 March, 1951. Reprinted in "A Secondary Role of Armor," p. A-3.

<sup>10</sup>Lt. Gen. Edward M. Almond, "Battle Employment of Artillery in Korea," notes from a conference at Ft. Sill, Oklahoma, 11 February, 1952, p. 6. Edward M. Almond Papers, Korean War Boxes, USAMHI.

<sup>11</sup>*Ibid.*, p. 11.

<sup>12</sup>*Ibid.*, p. 6.

<sup>13</sup>USAARMS, "A Secondary Role of Armor," pp. 19-20.

<sup>14</sup>*Ibid.*, p. 20.

<sup>15</sup>FM 101-10, *Staff Officer's Manual*, Department of the Army, Washington, D.C., August 1949, p. 174.

<sup>16</sup>USAARMS, "A Secondary Role of Armor," p. 35.

<sup>17</sup>*Ibid.*, p. 35.

<sup>18</sup>Headquarters, I Corps, "Armor Combat Lesson Bulletin Number 9," 11 March 1951. In documents section, USAMHI.

<sup>19</sup>USAARMS, "A Secondary Role of Armor," p. 36.

<sup>20</sup>Gen. Matthew B. Ridgway, *The Korean War* (Garden City, N.Y.: Doubleday, 1967), p. 89.

<sup>21</sup>*Ibid.*, pp. 89-90.

<sup>22</sup>USAARMS, "Employment of Armor in Korea, Volume I," pp. 236-237.

<sup>23</sup>Lt. Col. George B. Pickett, "Tanks in Defense," *Armor* 60 (July-August, 1951), pp. 14-17.

<sup>24</sup>*Ibid.*, p. 14.

<sup>25</sup>USAARMS, "Employment of Armor in Korea, Volume I," p. 237.

<sup>26</sup>U.S. Army Armor School, "Armor in Vietnam," Ft. Knox, Ky., October 1970, p. 5-1.

<sup>27</sup>*Ibid.*, pp. 5-1 to 5-6.

<sup>28</sup>U.S. Army, Vietnam, "Mechanized and Armor Combat Operations in Vietnam," Department of the Army, 28 March, 1967, p. 137. Documents section, USAMHI. Henceforth referred to as MACOV.

<sup>29</sup>USAARMS, , "Armor in Vietnam," p. 5-2.

<sup>30</sup>*Ibid.*, pp. 5-3 to 5-5.

<sup>31</sup>U.S. Army, Vietnam, MACOV, p. 137.

<sup>32</sup>Cpt. Ronald A. Hofmann, "The Affray at Slope 30," *Armor* 77 (January-February 1968), pp. 13-18.

<sup>33</sup>Cpt. Jacob R. Degenhardt, Jr., "Herringbone: A Useful Combat Tool," *Armor* 77 (May-June 1968), pp. 17-19.

<sup>34</sup>U.S. Army, Vietnam, MACOV, p. 93.

<sup>35</sup>Degenhardt, "Herringbone," pp. 17-19.

<sup>36</sup>U.S. Army, Vietnam, MACOV, pp. 92-93.

<sup>37</sup>*Ibid.*, p. 93.

<sup>38</sup>Degenhardt, "Herringbone," p. 18.

<sup>39</sup>Maj. Raymond R. Battreall, copy of speech given to the Armor Officers Advanced Course, 1966. In *Armor in Vietnam* documents file, USAMHI.

## CHAPTER V

### ARMOR EMPLOYMENT TECHNIQUES IN SECURITY MISSIONS - KOREA AND VIETNAM

The period after World War II has seen an increase in guerrilla-type activity in all kinds of conflicts. In both the Korean and Vietnam wars, guerrilla or insurgent units were a factor that U.S. units had to consider, although to a much lesser extent in Korea. Nevertheless, some North Korean soldiers cut off during the September, 1950 breakout remained at large in South Korea and fought as guerrillas, creating some concern in U.N. rear areas.<sup>1</sup> In Vietnam, the security problem was much greater, since nearly every supply route was subject to ambushes. The types of vehicles that normally moved along these routes - 2½-ton trucks, jeeps, and other thin-skinned wheeled vehicles - were particularly vulnerable to attacks, and ambushing them was an inviting way for VC units to hinder American operations and capture materials they needed. In area-type warfare, the challenge not only was to find, fix, and destroy VC and NVA military units, but to protect the ground logistic and communication routes between secure areas as well.<sup>2</sup>

In the Korean War, North Korean guerrilla bands deep behind the lines were normally a ROK army responsibility.

American units, particularly in the months after the Pusan breakout, did spend considerable efforts in antiguerrilla activity early in the war. In October, 1950, for instance, the 25th Infantry Division was responsible for 6500 square miles in the Taejon area and southeastern Korea, while the 2nd Division assumed responsibility for the southwestern part of Korea. Elements of the 1st Marines took part in antiguerrilla actions as well. In many cases, supply convoys had to be protected by combat units, but in nearly every case these missions were assigned to infantry.<sup>3</sup>

While U.S. armor units that had been pulled out of the front lines for rest and refitting occasionally performed passive anti-guerrilla security missions, for most U.S armor units a greater concern through most of the war was from NKPA or CCF units that had infiltrated through front line positions to threaten U.S. rear area activities. During the initial months of the war these tactics frequently succeeded in causing isolated U.S combat units to dissolve into small bands of soldiers who tried to exfiltrate back to U.N. lines.<sup>4</sup> As the war went on, surrounded and isolated U.S. units learned to maintain unit integrity and fought their way out of such situations. Nevertheless, infiltrating CCF units still posed an occasional threat to logistical support elements up near the MLR. The problems that these tactics created for U.S. units resulted in some small but noticeable

changes to the way American tank units approached rear security.

Changes in Army Field Manual 17-32, *Tank Platoon and Tank Company*, reflected this necessity to adjust to CCF and NKPA tactics. The edition in effect when the war began, dated 7 March 1950, contained a section titled "Security Against Guerrilla Action." Its first paragraph stated only that "guerrilla units may operate alone or in conjunction with enemy airborne troops."<sup>5</sup> A change (change 2) to the manual published on 8 October, 1952 expanded this section to include and emphasize infiltration by opposing forces. The new version stated that "guerrilla units *and infiltrators* may operate alone or in conjunction *with other enemy forces including* airborne troops."<sup>6</sup> An additional sub-paragraph expanded the definition of "guerrilla activity" and included one on infiltration not contained in the original FM 17-32.

Armor units involved in security missions against infiltrators and guerrillas generally worked with infantry units, requiring infantry support for protection. This was particularly true at night, when tanks were most vulnerable to infiltrators. U.S. units learned that purely passive defensive measures were often ineffective, since they surrendered the initiative to opposing forces and increased the opportunity for them to employ infiltration tactics. This concern was mentioned in FM 17-32, but the manual said little else about specific techniques to be used against

infiltrators.<sup>7</sup> One tactic that U.S. units did employ was to reduce the opportunity for infiltration through patrolling and through the use of the limited objective raids discussed earlier to keep the CCF on the defensive as much as possible.

Defensively, American tank units concerned with infiltrators increased internal unit security procedures, and conducted detailed reconnaissances before moving into a new area. FM 17-32 reflected this heightened concern with security even behind U.S. lines. Section 116(c) of the 7 March 1950 version was one vague, general statement that "supply, medical, and maintenance personnel must be protected during marches."<sup>8</sup> The October, 1952 change to the manual expanded that statement into a paragraph outlining the need for armor-infantry integration in anti-guerrilla actions due to the increasing ability of infiltrators to employ antitank weapons. The change also included an additional paragraph discussing the need for offensive rather than purely passive measures against infiltrators. It also mentioned vague, general procedures for armor platoons and companies to follow in areas where guerrilla and infiltrator actions might occur.<sup>9</sup>

The increase in attention given to the guerrilla and infiltrator threat was likely a result of the overall American experience in Korea against North Korean and Chinese Communist tactics. Still, little new was added.

Documented U.S. armor actions against guerrillas and infiltrators, other than purely passive security procedures, are few. Rear area security could not be ignored in Korea, particularly during the more fluid stages of the war, but guerrilla and infiltrator activity never became more than a noteworthy nuisance to U.S. armor units. Thus, unlike Vietnam, armor units in Korea were seldom specifically detailed to perform rear area security missions.

While infiltrators and guerrillas were an occasional nuisance to American units in Korea, the threat to American combat and support units in Vietnam was a serious problem. In an area war, every movement regardless of its purpose was subject to attack and required security. Likewise, bases and logistical installations required protection from combat forces as well. Early in the war, General Westmoreland had directed that one of the key missions of U.S. forces in Vietnam was to open the major roads, keep them safe, and make them usable for logistical and administrative traffic.<sup>10</sup> In support of this objective, many armored units in Vietnam, particularly cavalry units, conducted area security missions at one time or another. Armor and mechanized forces proved well suited to security missions during the Vietnam war.

Area security missions nevertheless were difficult to perform well. Techniques for these missions evolved through



the course of the war, having been a lost art prior to the 1960's. Traditionally a cavalry mission, U.S. units had done little in area security since the late 19th century and the Indian campaigns.<sup>11</sup> Area security doctrine began developing through trial and error in combat in Vietnam, primarily through the 11th ACR and other U.S. cavalry units.

In an area security mission in Vietnam, a cavalry squadron assumed responsibility for up to 2000 to 3000 square miles of territory containing numerous points, structures, and routes that had to be protected. The squadron area normally was divided into troop sectors. Sometimes a company or troop-sized unit remained in reserve, although the size of an area of responsibility often dictated that all units be committed. Within troop-sized units, at least one platoon or a tank section formed a reserve which functioned as a mobile strike force, or reaction force. To reduce the possibility of having their own positions attacked by undetected VC forces in an area, strike forces and unit logistical trains shifted their locations daily, using routes away from major road networks and trails. During movement, these units themselves were subject to ambush.<sup>12</sup>

Area security operations incorporated elements of both offensive and defensive armor techniques in Vietnam. To ensure that the designated area remained clear of enemy units, scout patrols (usually mounted) operated

continuously; their purpose was to detect guerrilla movement or at least inhibit it by maintaining a constant presence in the area.<sup>13</sup> Planning mortar, artillery, or close air support fires along the proposed patrol route was critical, though not always accomplished. If roving patrols made contact with VC forces, they returned fire and normally tried to stay in contact to keep those forces fixed, using indirect fire to help suppress VC weapons fire. Once the troop commander learned about the contact, he dispatched his reserve strike force to the area where contact occurred and reported the situation to the squadron headquarters.<sup>14</sup>

Since VC forces often initiated contact as a feint or diversion from their main forces, the squadron commander might confirm the troop commander's action, or he might override his decision and direct him to keep his reserve available for possible actions elsewhere.<sup>15</sup> Once a reaction force was dispatched, its purpose was to destroy the opposing force before it could melt away to fight another day. Often these techniques were successful in fixing and destroying VC units within a designated area, particularly if the terrain were easily trafficable to armor vehicles. If not, the VC found it relatively easy to shake the fixing force and melt away before the reaction force arrived. Results overall were mixed, although many commanders and observers in Vietnam concluded that route and area security operations would have been much more difficult and have

required many more troops were armor units not available to perform the task.<sup>16</sup>

Area security combat operations triggered by a roving patrol were virtually indistinguishable on the surface from search and destroy techniques. The purposes were somewhat different, however. Search and destroy operations actively sought contact and were specifically designed to fix and destroy large VC forces in areas that those forces dominated. Area security operations sought to preserve the security of areas already considered fairly "safe" or areas that had to be protected due to heavy logistical and administrative traffic. If no contact with opposing forces occurred, so much the better.<sup>17</sup>

Area security missions were closely tied with route security and convoy escort missions; route security formed a part of the overall area security responsibility of a unit, while convoy escort was a method of maintaining route security. Armor units assigned to route security missions used several techniques. One was to establish laager strongpoints or outposts at critical points or installations along the route, and then place an armored (usually cavalry) company-sized unit inside it.<sup>18</sup> Prior to scheduled use of the route (usually in the morning) units conducted sweeps along assigned sections of the route. Normally these units would return to the strongpoint, remaining prepared to react

to any activity along the route within its assigned sector.<sup>19</sup>

Often units assigned such missions were spread too thin and had to cover too much area to man strongpoints along the entire route. In such instances, some armor units went to a system of aggressive patrolling missions several thousand meters off the main route, in an effort to make more effective use of armor mobility when limited numbers of vehicles were available for the job.<sup>20</sup> Other armor units would escort logistical convoys along the entire route to the convoy's destination. Often, security units used a combination of the two. A minimum sized force accompanied a convoy, with a highly mobile quick reaction force of armor or mechanized infantry in reserve. If a convoy were ambushed, the reaction force would deploy to support the convoy and escorting units. Meanwhile, the ambushed escorting unit formed a herringbone, with the escorted vehicles moving behind the tanks or ACAVs for additional protection (see Figure 5a).<sup>21</sup>

These techniques sometimes had severe drawbacks. Outpost route security missions required significant forces to be effective, drawing them away from other uses. The static positions were easy for VC to identify; if units used the same positions more than once, they would often find that the logical vehicle positions had been mined.<sup>22</sup> Armor units detailed for escort missions incurred maintenance

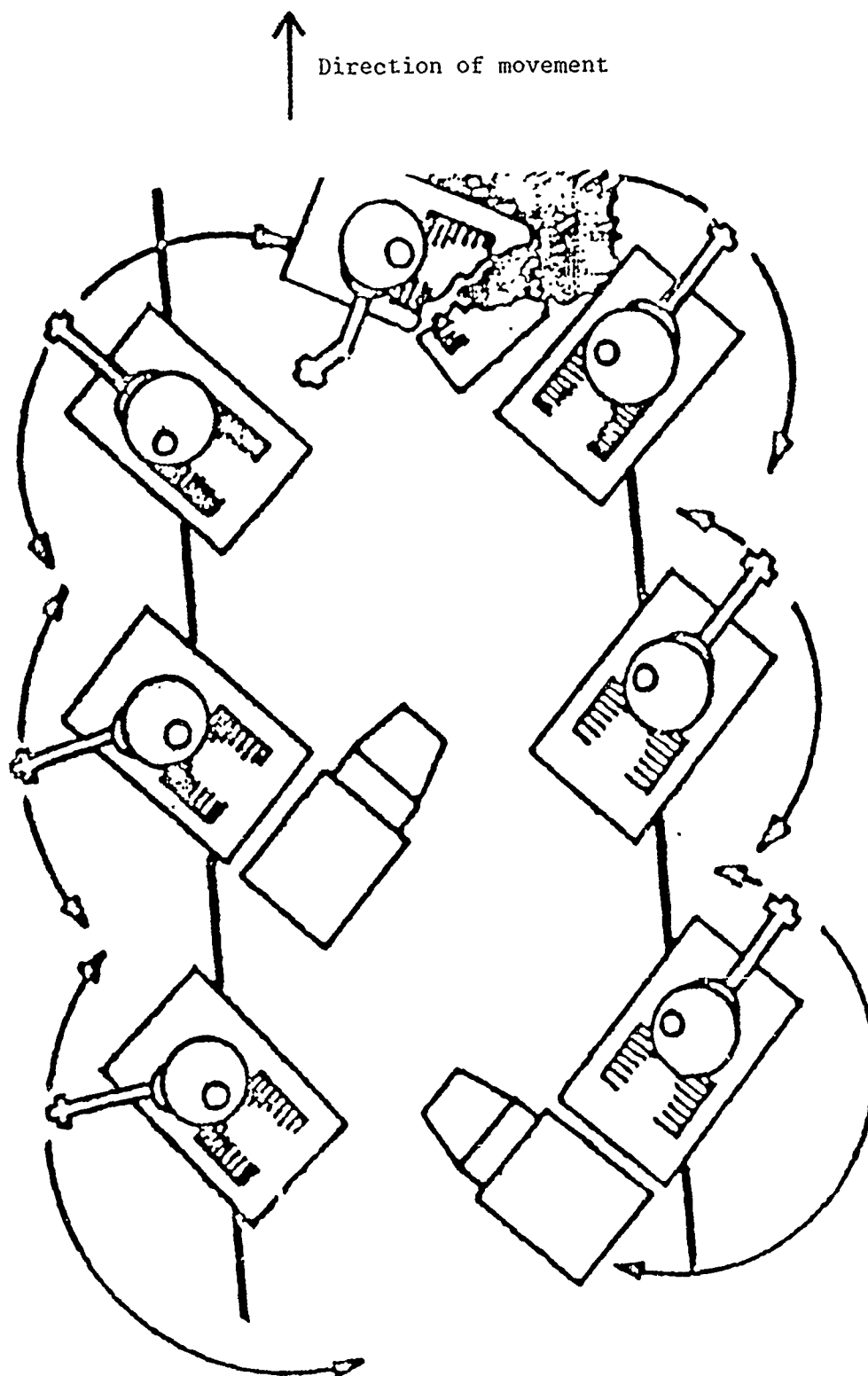


Figure 5a - Herringbone formation during ambush on convoy escort.

problems due to the heavy wear on the vehicles.

Furthermore, using combat units to escort convoys was still an inefficient means of providing security, since it tied down significant forces as well when escorting time, recovery time, and maintenance requirements were factored in. Extended use of armored units in escort missions accelerated fatigue among vehicle crews. Units often tried to avoid employing their vehicles in convoy escort missions unless an extremely critical convoy was moving through their particular sector.<sup>23</sup>

Convoy escort required large commitments of armor forces, but generally was the most secure means of protecting wheeled-vehicle convoys. In most cases, convoys escorted by armor vehicles reached their destinations safely and without incident. The 3rd Squadron, 4th Cavalry of the 25th Infantry Division performed escort missions almost continuously within the III Corps Tactical Zone during the early part of 1967. By the middle of that year the squadron escorted an average of 8,000 vehicles per month along Route 1 between Saigon and Tay Ninh to the north, even performing some such missions successfully at night.<sup>24</sup>

Despite appearing simple and routine, however, convoy escort operations required detailed planning to be done well. Units occasionally suffered significant losses on escort missions in areas that they assumed to be "quiet," illustrating the difficulty of security missions in Vietnam.

One platoon in the 11th ACR was ambushed during a convoy escort mission in May, 1967 on a route that had been "cleared" earlier that day by another unit. Assuming a routine mission, the platoon had no planned indirect fire and no plan for action on contact. The result was that 8 of the 9 vehicles of the escorting unit were destroyed and over half the men in the platoon were killed.<sup>25</sup>

To further enhance security along road marches and convoy missions, American armor units often "prepared" the major routes by clearing the areas to each side of the road out to 100 or 200 meters. The purpose was to make it more difficult for ambushing Viet Cong units to remain undetected and concealed. Units used engineer bulldozers, "Rome plows" and the tracks of their own tanks to do the clearing.<sup>26</sup> Units conducting area security missions off the roads used other battlefield preparation techniques to enhance armor mobility. In rice-growing regions, VC units often constructed dams at critical points to maintain a high water level that hindered tank movement. Armor units preparing to operate in these areas sent in engineer squads to dismantle these dams to release some of the water, firm up the ground, and make it easier for tanks to move without becoming mired.<sup>27</sup> The obvious disadvantage of preparing a region for tank movement was that it tipped off opposing forces that U.S. armored units were likely to be moving through the area. However, in security missions this was not all bad if

it led to a withdrawal of VC soldiers, since contact was not an objective. On the positive side, prior preparation of restrictive terrain expanded the employment range of armored and mechanized units if opposing units chose to remain in the area.<sup>28</sup>

Security missions in Vietnam were a large part of the overall experience of American armor units. Even in regions where armored vehicle mobility was very limited, armor and cavalry units could play a role that remained vital in an area-type war. Despite occasional lapses and VC successes in ambushing U.S. convoys, the ability of U.S. armor forces to quickly react to VC initiatives, to withstand heavy small arms fire, and to generate a large volume of return fire made them the best units available for protecting U.S. administrative and logistical traffic in a war in which attacks could occur at almost any time and at any place.

### Summary

The scope and methods of security operations for armored units differed considerably between the Korean and Vietnam conflicts. In Korea, a distinct "rear area" existed, much like one had during most U.S. operations in World War II. Guerrillas were not a significant problem to U.S. forces since ROK units bore the major responsibility for dealing



with them. Their presence during the Korean War was enough to cause some changes to the treatment of guerrillas in FM 7-35, *Tank Platoon and Tank Company*. The major concern of U.S. armored forces, however, was from regular Chinese or North Korean soldiers who had infiltrated U.S. front lines and became a threat to U.S. rear area operations. The threat was small enough, however, that while awareness increased, no significant new doctrine or techniques emerged for armor employment against irregular or guerrilla units.

Vietnam was far different in this respect. The nature of the no-front, area war dictated a deep concern for security of routes and logistical networks. U.S. units were initially unfamiliar with area security procedures, and had no doctrine for such operations other than what little had emerged from the Korean War. However, American units adapted quickly with the development of techniques for employing mechanized and armor units in area security, route security, and convoy escort operations. In many respects, area and route security missions suited armor capabilities in Vietnam more than any other, and their importance was undeniable. The ability of U.S. armored and mechanized units to perform effectively in such missions was one example of the value of armor forces in limited war.

## Notes for Chapter Five

<sup>1</sup>Roy B. Appleman, *The U.S. Army in the Korean War*, volume 1. *South to the Nakdong, North to the Yalu* (Washington, D.C.: Department of the Army, 1961), pp. 721-728.

<sup>2</sup>Maj. Gen. Arthur L. West, Jr., and Col. Donn A. Starry, "Armor in an Area War," *Armor* 77 (September-October, 1968), p. 35.

<sup>3</sup>Appleman, *South to the Nakdong, North to the Yalu*, pp. 723-727.

<sup>4</sup>*Ibid.*, pp. 179-181, 700-708.

<sup>5</sup>Field Manual (FM) 17-32, *Tank Platoon and Tank Company* (Washington, D.C.: Government Printing Office, 7 March 1950), p. 117.

<sup>6</sup>*Ibid.*, with change 2, 8 October, 1952, p. 2.

<sup>7</sup>*Ibid.*, p. 2.

<sup>8</sup>FM 17-32, p. 118.

<sup>9</sup>*Ibid.*, with change 2, p. 2.

<sup>10</sup>Gen. Donn A. Starry, *Mounted Combat in Vietnam* (Washington, D.C.: Department of the Army, 1978), p. 107.

<sup>11</sup>Lt. Col. Raymond R. Battreall, "Cavalry Operations V - Security and Counterreconnaissance," *Armor* 78 (May-June, 1969), p. 43.

<sup>12</sup>*Ibid.*, pp. 43-44.

<sup>13</sup>West, "Armor in an Area War," p. 35.

<sup>14</sup>Battreall, "Cavalry Operations V," pp. 43-45.

<sup>15</sup>*Ibid.*, p. 44.

<sup>16</sup>Starry, *Mounted Combat*, pp. 107-111.

<sup>17</sup>Battreall, "Cavalry Operations V," p. 44.

<sup>18</sup>Starry, *Mounted Combat*, p. 107.

<sup>19</sup>*Ibid.*, pp. 107-108.

<sup>20</sup>*Ibid.*, p. 107.

<sup>21</sup>U.S. Army, "Armor in Vietnam," Special Text 17-1-3, U.S. Army Armor School, Ft. Knox, Ky., October, 1970, p. 6-3.

<sup>22</sup>Starry, *Mounted Combat*, pp. 107-108.

<sup>23</sup>*Ibid.*, pp. 108-109.

<sup>24</sup>*Ibid.*, pp. 110-111.

<sup>25</sup>*Ibid.*, p. 108.

<sup>26</sup>Maj. Robert W. DeMont, "Battlefield Preparation in Area Warfare," *Armor* 78 (May-June, 1969), pp. 26-29.

<sup>27</sup>*Ibid.*, p. 28.

<sup>28</sup>Starry, *Mounted Combat*, pp. 108-109.

## CHAPTER VI

### SUMMARY AND CONCLUSIONS

Since World War II, the United States has fought two major wars. U.S. Army doctrine during the past forty years generally has concentrated on how best to employ its forces in a mobile, mechanized conflict against Soviet or Soviet-style forces on a European battlefield. The two wars that the U.S. has fought since 1945 have not been that kind of conflict, however. In both Korea and Vietnam, the terrain precluded the use of armor in many of the roles for which armor units planned and trained. In both conflicts, the composition and tactics of enemy forces did not match doctrinal assumptions, undermining the validity of such doctrine in those wars. For example, the U.S. army consistently has held that "the best anti-tank weapon is another tank," and consequently has focused armor training and doctrine on the destruction of enemy tanks. Yet aside from a brief period early in the Korean War, both wars presented the U.S. Army with few enemy tanks to kill. The overall result has been that the wars the U.S. Army has expected and the ones that it got instead were considerably different.

The two conditions mentioned above - restrictive terrain and an "unconventional" or unfamiliar enemy - affected U.S. Army armor employment during the Korean and Vietnam wars. The nature of the terrain and of the opposing military forces led many to conclude initially that tanks would not be very useful in either war. This assessment proved false. Both wars showed that while terrain could certainly limit the use of armor, it could not bar its use entirely. Once it became apparent that tanks could be useful, the unfamiliar conditions of each war forced U.S. armor units to search for and develop new purposes and techniques for employing tanks and mechanized vehicles.

Thus, both wars found U.S. units employing tanks successfully in rugged, mountainous, swampy, or thickly vegetated terrain that many had thought intraversable to armor prior to those conflicts. Not surprisingly, in Korea U.S. units also quickly and unsurprisingly took advantage of the CCF's lack of armor, using tank mobility and firepower to good effect as part of U.S. defense in depth tactics. In Vietnam, tanks in defensive laager positions frequently inflicted heavy casualties on attacking Viet Cong and North Vietnamese Army units. Armored cavalry units in Vietnam proved well-suited to performing area security and convoy escort missions, a minor mission in pre-war doctrinal manuals but an extremely important one during the Vietnam War.

A third condition of both wars - limited political objectives and restrictions on the use of ground forces - also had a significant impact on armor employment techniques in the offensive role. After the Chinese intervention in Korea in November, 1950, the overall U.S. objective in the war reverted from reunification to preserving the status quo ante bellum. In May and June of 1951, when the Chinese army appeared to be smashed and conditions seemed opportune for armor breakthrough and exploitation operations, strategic considerations resulting from the U.S. desire to open negotiations precluded armor employment in these doctrinal roles. Instead, during the remainder of the war tanks supported limited objective operations such as bunker destruction and daylight armored raids that reflected the political limitations of the war.

In Vietnam armor employment was restricted within the boundaries of South Vietnam, except for a brief period in which U.S. units conducted ground operations in Cambodia. Potential objectives for armor units in offensive operations - bases and installations in North Vietnam, for instance - were clearly unassailable. Existing American military policy in Vietnam resulted in a strategy incorporating limited ground military operations, which in turn limited the means for employing armor. Thus, the U.S. Army used armor units in operations designed to eliminate Viet Cong and NVA concentrations and installations within South Vietnam -

operations which evolved into search and destroy tactics. Armor units consequently developed new techniques to perform these non-doctrinal missions.

It is important to remember that conventional armor employment did frequently occur in both wars. In addition, many of the employment techniques in these conflicts were essentially modifications of existing doctrinal methods designed to meet the conditions at hand, or secondary missions which assumed greater importance than in previous wars. Furthermore, the techniques that emerged in both Korea and Vietnam had significant limitations and by no means were they always successful.

Generally, American armor units in Korea and Vietnam performed their limited roles capably. Certainly those roles were not decisive ones in terms of the overall picture. There is little evidence to suggest that U.N. forces, with overwhelming air superiority and artillery fire power, could not have achieved the same results in Korea without tanks. Nor is there credible evidence to indicate that the American effort in Vietnam would have failed more quickly without the armor units there. Nevertheless, it does seem safe to say that the results that U.S. Army ground forces achieved in each war may very well have required more soldiers and cost more lives had the U.S. deployed infantry units alone without armor to support and complement their efforts.

Ultimately, despite the substantial impact that restrictive terrain, "unconventional" opposing armies, and political limitations had on American military operations in Korea and Vietnam, one basic tenet upon which American doctrine rested did not change. When the situation permitted the use of armor, well-conducted *combined arms* operations generally achieved satisfactory results at a relatively low cost in lives, though the scale and nature of those operations differed to some extent from traditional U.S. doctrine. Armor units, then, played an important role in both wars, though not a decisive one.

Disturbingly, the U.S. Army and the armor establishment in general seemed eager to discount much of the armor experience in each war as irrelevant to future conflicts once those wars ended. The Armor School study which concluded that armor experiences during the last two years of the Korean War<sup>1</sup> were unimportant due to the "unnatural" political restrictions was noted earlier. Armor experiences in Vietnam seemed to fade from importance as soon as Vietnamization began and the war wound down for U.S. forces, long before the 1973 Arab-Israeli war underscored the stunning lethality of the modern "conventional" battlefield. The annual U.S. Army armor conferences held in 1968 and 1969 devoted their entire agendas toward discussing armor unit experiences and tactical techniques in Vietnam. The 1970 conference, however, focused once again on the "two major



forces" threatening "the security of the Free World" - the Soviet threat on the land mass of Europe and the Chinese threat in Asia.<sup>2</sup> While the U.S. Army in Europe certainly had been badly neglected during the height of the Vietnam War and warranted a lot of attention, it appeared that the limited war techniques developed in Vietnam for armor faded too quickly into relative insignificance. An appropriate balance between preparing for the most likely kind of war - limited war - and preparing for the most dangerous threat to the U.S. - full-blown general war - remains to be achieved.

The U.S Army armor experience in limited wars in Korea and Vietnam indicates that armor units will likely play an important role in any future wars of that nature. Furthermore, the past several decades have hinted that while America's most vital interests may be tied to Europe, the U.S. will likely fight its next war elsewhere, and that the war will be a limited one in at least some respects. U.S. Army armor doctrine and training might perhaps address more intricately the tactical employment techniques it will use should the next war be a limited one. If and when such a war occurs, the U.S. Army and its armor forces will certainly have a wealth of experience from Korea and Vietnam to draw upon.

## Notes for Chapter Six

<sup>1</sup>U.S. Army Armor School, "Employment of Armor in Korea: The First Year, Volume I," Report by Committee 11, Armor Officers Advanced Course, 1951-1952. Ft. Knox, Ky., May, 1952, p. 2.

<sup>2</sup>Transcripts of Armor Conferences appeared annually in the July-August issue of Armor journal. The topic of the 1968 conference presentation was "Mounted Combat in Vietnam," and the following year's seminars similarly focused on "Mounted Combat Operations in Vietnam." Discussion in both conferences addressed few other topics. The 1970 conference discussed future trends in armor (orienting on meeting the Soviet threat), development of the new main battle tank for the 1970's and 1980's, and improving the armor school campus. Armor employment experiences in Vietnam appeared nowhere. The emphasis was on getting back to "normal" mounted operations.

BIBLIOGRAPHY  
PRIMARY SOURCES

Journal Articles

- Battreall, Raymond R. "Cavalry Operations." *Armor* 77, September-October, 1968, pp. 48-52.
- . "Cavalry Operations III - Marches and Bivouacs." *Armor* 78, January-February, 1969, pp. 33-35.
- . "Cavalry Operations IV - Reconnaissance." *Armor* 78, March-April, 1969, pp. 39-45.
- . "Cavalry Operations V - Security and Counterreconnaissance." *Armor* 78, May-June, 1969, pp. 42-47.
- Burns, Robert L. "Armor in the Hills." *Armor* 60, September-October, 1951, pp. 33-36.
- Cobb, William W. "Mounted Combat in Vietnam." *Armor* 77, July-August, 1968, pp. 10-13.
- Degenhardt, Jacob R., Jr. "Herringbone: A Useful Combat Tool." *Armor* 77, May-June 1968, pp. 17-19.
- De Mont, Robert W. "Battlefield Preparation in Area Warfare." *Armor* 78, May-June, 1969, pp. 26-29.
- Dolvin, Welborn G. "Tanks in the Infantry Division." *Armor* 61, March-April, 1952, pp. 6-9.
- Drake, Robert E. "The Infantry Regiment's Tank Company." *Armor* 60, September-October, 1951, pp. 14-17.
- Farley, Roy W. "Blackhorse Report II." *Armor* 77, March-April, 1968, p. 6.
- Freedman, Sam. "Tankers at Heartbreak." *Armor* 61, September-October, 1952, pp. 24-27.
- Hofmann, Ronald A. "The Affray at Slope 30." *Armor* 77, January-February, 1968, pp. 13-18.
- McFalls, Carroll. "Bunker Destruction by Tank Cannon." *Armor* 61, March-April, 1952, pp. 10-14.
- Nevins, Robert H., Jr. "Air Cavalry Rind and Fix Opera-

tions." *Armor* 77, July-August, 1968, pp. 14-16.

Patton, Col. George S. "Blackhorse Operations." *Armor* 78, July-August, 1969, pp. 36-37.

Pickett, George B. "Tanks in Defense." *Armor* 60, July-August, 1951, pp. 14-17.

----- "Tanks in Korea: 1950-1951." *Armor* 60, November-December, 1951, p. 12.

----- "Task Force Crombez at Chip'yong-ni." *Armor* 61, July-August, 1952, pp. 34-38.

Walson, Charles W. "Tanks in Positional Warfare." *Armor* 61 November-December, 1952, pp. 13-16.

West, Arthur L. and Starry, Donn A. "Armor in an Area War." *Armor* 77, September-October, 1968, pp. 34-43.

----- "Go or No Go in Vietnam." *Armor* 77, March-April 1968, pp. 20-23.

Withers, William P. "Report from Korea." *Armor* 60, March-April, 1951, p. 23.

#### U.S Army Armor School Studies and Texts

Report by Committee 9, Armor Officers Advanced Course, 1951-1952. "The Effects of Terrain, Hydrographics, and Weather on the Employment of Armor in Korea." Ft. Knox, Ky.: U.S. Army Armor School, March, 1952. U.S. Army Armor School Library (USAASL).

Report by Committee 10, Armor Officers Advanced Course, 1952-1953. "A Secondary Role of Armor: Tanks as Artillery." Ft. Knox, Ky.: U.S. Army Armor School, April 1953. USAASL.

Report by Committee 11, Armor Officers Advanced Course, 1951-1952. "Employment of Armor in Korea: The First Year, Volumes I and II." Ft. Knox, Ky.: U.S. Army Armor School, 1952. USAASL.

Report by Committee 12, Armor Officers Advanced Course, 1951-1952. "Security of the Trains of Armored Units Against Guerrilla-Type Activity." Ft. Knox, Ky.: U.S. Army Armor School, April, 1952. USAASL.

Report by Committee 35, Armor Officers Advanced Course,

1952-1953. "Employment of Armor in Korea: The Second Year." Ft. Knox, Ky.: U.S. Army Armor School, 1953. USAASL.

U.S. Army. "Armor in Vietnam." Special Text 17-1-3. U.S. Army Armor School, October, 1970. USAASL.

#### Department of the Army Publications

Department of the Army. *Field Manual (FM) 7-35: Tank Company, Infantry Regiment.* Washington, D.C., Government Printing Office, June 1949. U.S. Army Military History Institute, Carlisle, Pa. (USAMHI).

Department of the Army. *Field Manual (FM) 17-12: Tank Gunnery.* Washington, D.C.: Government Printing Office, October 1949. USAMHI.

Department of the Army. *Field Manual (FM) 17-32: Tank Platoon and Tank Company.* Washington, D.C.: Government Printing Office, March, 1950. USAMHI.

Department of the Army. *Field Manual (FM) 17-33: Tank Battalion.* Washington, D.C.: Government Printing Office, March, 1949. USAMHI.

Department of the Army. *Field Manual (FM) 17-35: Armored Cavalry Platoon, Troop, and Squadron.* Washington, D.C.: Government Printing Office, April, 1962. USAMHI.

Department of the Army. *Field Manual (FM) 100-5: Field Service Regulations, Operations.* Washington, D.C.: Government Printing Office, February, 1962. USAMHI.

Department of the Army. *Field Manual (FM) 100-5: Field Service Regulations, Operations,* March 1967. USAMHI.

#### Manuscripts

U.S. Army Military History Institute, Carlisle, Pa.

Edward M. Almond Papers. Korean War Boxes, Level E.

Headquarters, I Corps. *Armor Combat Lesson Bulletins.* Department of the Army, 11 March 1951. Korean War Boxes, Level E.

Headquarters, X Corps. X Corps Summaries of Operations. Korean War Boxes, Level E.

U.S. Army. Transcripts of speeches and lectures given at the U.S. Army Armor School, Ft. Knox, Ky., 1966. Vietnam War Documents File.

### Studies

U.S. Army, Vietnam. "Mechanized and Armor Combat Operations in Vietnam." San Francisco: Department of the Army, March 28, 1967. Vietnam War Documents File.

### SECONDARY SOURCES

Appleman, Roy E. *The United States Army in the Korean War, Volume I: South to the Naktong, North to the Yalu (June-November, 1950)*. Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1961.

Craven, Virgil E. "Operation Touchdown Won Heartbreak Ridge." *Combat Forces Journal* 4, December 1953, p.24.

Doughty, Robert A. "The Evolution of U.S. Army Tactical Doctrine, 1946-1976." *Leavenworth Papers*. Ft. Leavenworth: Combat Studies Institute, 1979.

Fehrenbach, T.R. *This Kind of War: A Study in Unpreparedness*. New York: Macmillan, 1963.

Gugeler, Russell A. *Combat Actions in Korea*. Washington, D.C.: Combat Forces Press, 1954.

Haffa, Robert P. *The Half War: Planning U.S. Rapid Deployment Forces to Meet a Limited Contingency, 1960-1963*. Boulder: Westview Press, 1984.

Hermes, Walter G. *The United States Army in the Korean War, Volume II: Truce Tent and Fighting Front*. Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1966.

Howze, Hamilton. "Is the Tank a Dead Duck?" *Combat Forces Journal* 1 (August, 1950): 29.

Johnson, Ellis A. "Armored Warfare in the Eighth Army in Korea." Report, Operations Research Office, 1951. Korean War Boxes, USAMHI.

Mahler, Michael D. *Ringed in Steel: Armored Cavalry, Vietnam, 1967-68.* Novato, Calif.: Presidio Press, 1986.

Marshall, S.L.A. *The River and the Gauntlet: Defeat of the Eighth Army by the Chinese Communist Forces, November, 1950, in the Battle of the Chongchon River, Korea.* New York: Morrow, 1953.

Millett, Allan R. and Maslowski, Peter. *For the Common Defense: A Military History of the United States of America.* New York: Free Press, 1984.

Ogorkiewicz, Richard M. "The Evolution of Armored Tactics." *Military Review* 37 (February, 1958): 31-39.

Rees, David. *Korea: The Limited War.* New York: St. Martin's Press, 1964.

Ridgway, Gen. Matthew. *The Korean War.* Garden City, N.Y.: Doubleday, 1967.

Sawyer, Robert K. *Military Advisors in Korea: KMAG in Peace and War.* Washington, D.C.: Office of the Chief of Military History, 1963.

Schnabel, James F. *The United States Army in the Korean War, Volume III. Policy and Direction: The First Year.* Washington, D.C.: Office of the Chief of Military History, 1972.

Stanton, Shelby. *Vietnam Order of Battle.* New York: Galahad, 1981.

Starry, Gen. Donn A. *Vietnam Studies: Mounted Combat in Vietnam.* Washington, D.C.: Department of the Army, 1978.

Webb, Raymond. *The 72nd Tank Battalion in Korea.* Tokyo: Tappan, 1952.

Weigley, Russell F. *History of the United States Army.* New York: Macmillan, 1967.